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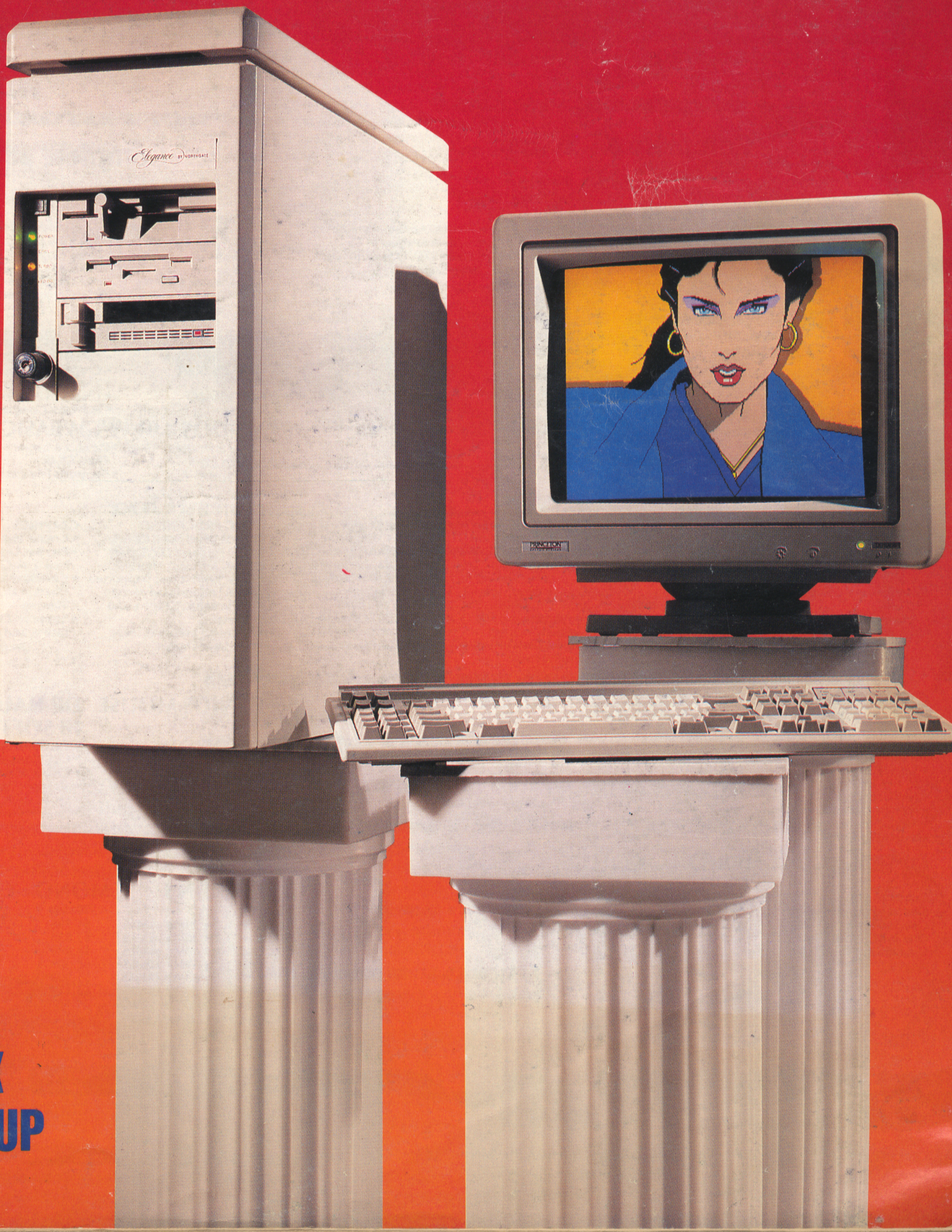

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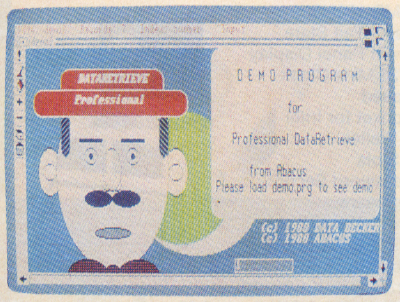
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for

Professional DataRetrieve

from Abacus

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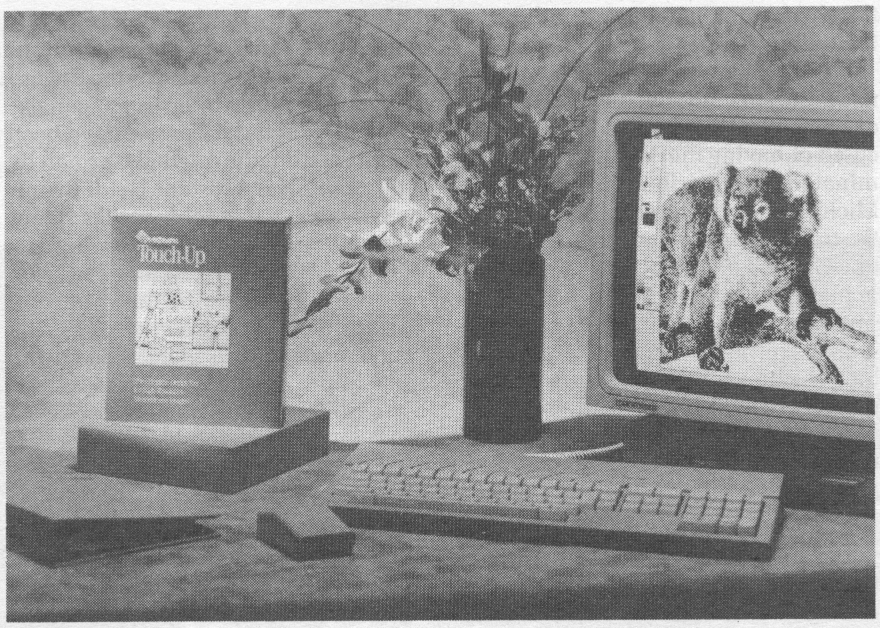
TOUCH-UP MASTERS BIT-IMAGES

by John Nagy

Touch-Up is the newest Atari ST (and soon IBM) application from Migraph, the people who brought us Easy-Draw. A fully GEM (mouse) program, it requires at least one meg of RAM, and runs in all resolutions both color and monochrome. Touch-Up is every bit as powerful a drawing and editing tool for bit-images (IMG files) as Easy-Draw is for vector graphics (GEM files).

Monochrome high resolution scanned art is available everywhere these days, but until Touch-Up, there was no comprehensive package available to manipulate, edit, convert many other formats to IMG, or create original art in the IMG format. Ideal for countless Desktop Publishing users, this program's power and options are somewhere between challenging and intimidating. What I will attempt to describe here will give you a general feel for the product, but I cannot hope to tell you everything that Touch-Up can do. Suffice it to say, if this all sounds like something you can use, trust me, there is more.



One of the main features of Touch-Up is its ability to adjust image size and resolution, independent of screen resolution. Images can be optimized for the resolution of your output device. Touch-Up can load and convert IMG, Neochrome, Degas, mono PCX, MacPaint, and (using an external converter) even Printmaster files. Output can be IMG, IFF/ILBM, TIFF, GIF, MacPaint, Printmaster, Degas, and PCX.

A variety of monochrome fill and conversion methods are available to choose from, either automatically or via user-selected color/pattern substitution tables. In this part of Touch-Up, users may recognize some of the options offered by Migraph's Supercharger accessory for Easy-Draw. Touch-Up completely supercedes the Supercharger and goes much further.

Once an image is loaded, editing can proceed using an array of drawing tools (boxes, lines, arcs, circles, and combinations thereof), freehand sketching, Bezier and B-Spline curves, fills, and more. Writing modes include solid, exclusive-or (reversing any background), transparent, and reverse transparent.

Also included is a complete paint section with a "lightning mode" for fast full featured composition of your own art, or adding on to a loaded image. Full clip/cut/paste and flip/invert/rotate plus stretch, adjustable shadow, and compress are all here.

Text in a variety of pleasant fully scalable fonts is also supported via GDOS screen fonts. Lettering can be added with all the same power as drawn objects, with selectable fills. Bolding, outline, italic, etc, of course!

Touch-Up comes in a handsome box/binder with an equally impressive massive manual. The documentation is quite good, readable and direct, with ample illustrations. However, the sheer bulk of the manual and the program options make Touch-Up a slow application to master. I found it somewhat more frustrating due to the slowness of screen redraw and file manipulation (it often writes and reads temporary files while you work). I am told that G + Plus (by Codehead) dramatically improves the GDOS related screen slowness without problems, but have not had the opportunity to see it in action.

Another "feature" of Touch-Up is the copy protection scheme. Although the disk can be copied or put on hard drives without incident, a PSK device (Program Security Key) must be attached in the computer printer port in order for the system to run. The device is essentially a smart through-port to the printer (which need not be attached). It contains a battery-backed RAM chip which is accessed periodically by Touch-Up. If the device does not respond as programmed when polled, the system locks. The PSK is new to the Atari world, but has been around in the IBM market for a while. It effectively limits a user to a single executable copy of the program, yet causes no user operation hassles. Passive restraint. Although the PSK is somewhat delicate (users must not attach or detach the unit while either printer or computer is on), the battery should operate for at least eight years.

However, the PSK unit itself must be licensed by Migraph from a third party, and the cost is said to be near $40 each. Migraph has stated that the cost of this device has been absorbed internally, that is, that Touch-Up is being sold for the same price it would have been if it had less expensive protection. Additional sales which would have been lost to multiple user settings (in industry

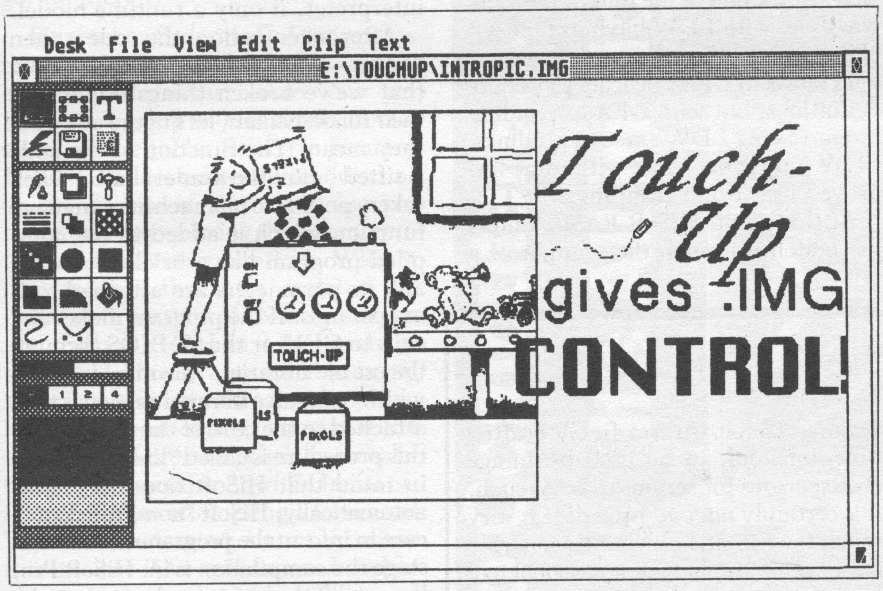


Figure 1

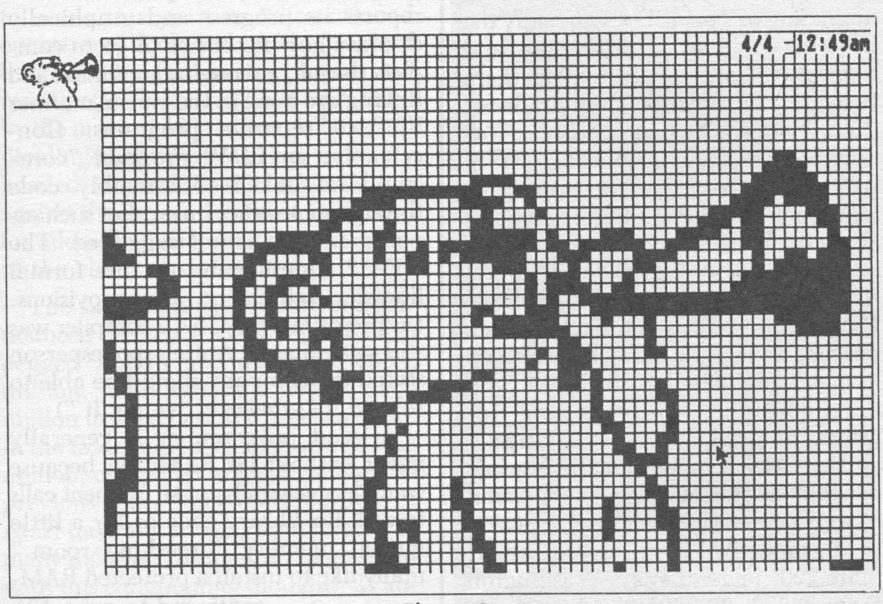
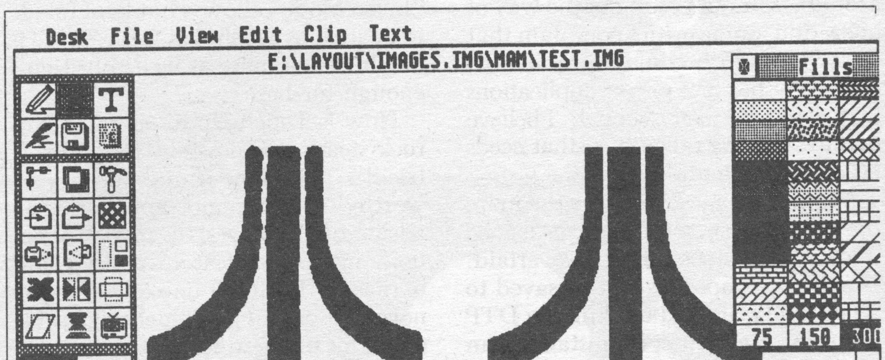


Figure 2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300

Scanned Art before and after pixel editing and cleanup.

Figure 3

BATTLE OF THE BASICS, ROUND 2

by D.F. Scott

GFA vs. LDS vs—HiSoft??

It might seem to the newcomer that the realm of software marketing and manufacturing is governed rather dictatorially by a conglomerate of source code commandantes, dispensing orders in the form of statements and functions to their subordinates, whose marketing battles are waged with all the strategy and glory of battle. Every so often, our utopian image of the business of computing is upset by incidents reminiscent of a late Saturday night poker game where the fellas got just a bit too rowdy.

In September of 1988, MichTron had just begun marketing version 3 of what had become, by most estimates, the best-selling ST language development system in America—GFA BASIC 3. The product originates in Dusseldorf, Germany, from GFA Systemtechnik. At about the time MichTron CEO Gordon Monnier (*Computer Shopper* ST Control Panelist) was planning the release of GFA 3 for the Amiga, the GFA company informed him of its intentions to spin off a division in the United States for direct distribution of its German products here.

Monnier's response to this little announcement was quick and clean, like a neurosurgeon extracting a tumor. He contacted HiSoft, which had just released a BASIC compiler in its native Britain. HiSoft and MichTron were no strangers to each other; the former had been in contact with the latter several times previously looking for a US distributor. Within hours, literally, a deal was struck. MichTron would be the distributor of HiSoft products—including its BASIC line—in the US.

GFA did not take too kindly to the news and, in a presumably hostile tone of voice like the stranger in town accused of having marked his cards, terminated its distribution pact with MichTron—which really had thought the two companies had already broken up. GFA then reportedly offered top management positions in its USA division to some of MichTron's top managers; but not enough executives took the bait for GFA to form a company. MichTron had called GFA's bluff. Laying its hand upon the table, GFA was shown to have nothing but an ace high.

That ace was Antic Software, the publishing company division in San Francisco whose ranking products at that time were the CyberStudio series and the home accounting program Phasar. Antic had just begun to publish Amiga software, and usually had no trouble obtaining advertising in a magazine since, after all, Antic was one. So Antic Software President Jerry Wolosenko welcomed GFA with open arms; however, Antic's Mimi Carpenter tells *Computer Shopper*, plans have only been made so far for Antic to support the GFA BASIC series and no other GFA products—such as its Raytrace and Artist graphic utilities, and the Draft Plus CAD program reviewed here last February.

Carpenter states also that Antic has assumed the job of product support, both over the phone and on its SIG*Atari service on the CompuServe telecom network. The infamous GFA manuals—which were once notorious for having blindly mutilated the English language with such terms as "canals" through which data pass—have been rewritten from the original German by Antic Editorial Assistant Heidi Brumbaugh who, we're told, speaks fluent German and has programming experience. GFA BASIC 3 for the Amiga is now available, listing for $139.95—curiously $40 more than its ST counterpart—and its manual does show some improvement over its predecessor, despite the occasional absense of some moderately vital verbs.

Antic is also said to be considering a lower-cost upgrade policy for owners of GFA BASIC 2 for the ST; but when questioned, Antic P.R. was uncertain whether that policy would apply to those who had acquired the product free as a bonus supplement to the company's STart magazine.

And Then There Were Three—

With that bit of news out of the way, let's get back to the business of battling BASICs. Last January, we sounded the bell for round one of what was then a two-way bout between GFA 3 and Logical Design Works' LDW 2 compiler. At the end of the round, the score was a tie, with LDW having come out of its corner at the bell connecting some solid blows to GFA's delicate procedure definitions, but with GFA responding by canvassing LDW's system bindings. LDW fought back late with some improved user event-trapping.

At this point, HiSoft BASIC enters the match, in much the manner of a "professional" wrestling bout where the newcomer attempts to prematurely wrest the all-important gold belt from the champion with the red-bandana and the uneven man-tan. Wearing the Union Jack and bearing the motto "The Old School," HiSoft's packages—named HiSoft BASIC and HiSoft BASIC Professional, a la Borland. Each package contains a tremendously fast compiler; well-embedded in a shell program, which also contains a text editor.

HiSoft appears to be a company filled with reasonable people, as is evident from the success of its marriage between compiler and editor. HiSoft divides memory into three segments: an area for the editor with user selectable size, an area for the compilation to take place, and a region within which the compiled product may run. In the compilation process, the source is taken from the editor's memory block, duplicated into the compiler area, and tokenized—which generally means that individual commands are broken down from sequences of letters into byte-long "tokens," or numerals which represent these commands. Good interpreters generally tokenize statements and functions on the fly—GFA is one of them—so HiSoft could almost be a full-fledged interpreter, if only a runtime model.

After tokenization, the code is then parsed—which means, roughly, now that we've broken things down into their fundamentals, let's figure out what they mean. The function of the code is sifted out of the numeral mess; each token points to a machine-language function which is added to the compiled program like a brick to a wall, and its parameters are attached to it as operands. If the program makes any calls to GEM or the ST BIOS through the use of "libraries," the machine code which operates a library function is then attached to the core of the program—this procedure is called "linking." Keep in mind that HiSoft does all of this automatically; HiSoft "non-Pro" doesn't care to inform the programmer of what stage the compilation is in. HiSoft Pro, by contrast, reports each stage to the programmer. By comparison, LDW reports its progress and graphically displays how far it has to go to complete the job, although compilation and linking are done in the classic manner by two separate programs. Conceivably, an LDW program "core" could be linked to assembly code through some other linker, but such experimentation is not suggested. The GFA 2 compiler did not use formal libraries, so it had no linker provisions. (At press time, the GFA 3 compiler was still unavailable; Antic's spokesperson stated the company should be able to release it "whenever we get it.")

A good programmer is generally never without his RAMdisk; because compilers generally make frequent calls to disk for library code or for a little virtual memory "breathing room," many like to install a protected RAM-

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► TOUCH-UP MASTERS BIT-IMAGES

and universities where one-copy, one-user is more fantasy than fact) are expected to make up for the cost of the device. As for keeping Touch-Up safe from Piracy, the PSK is unlikely to succeed. But for honest and nearly honest users, it provides the needed incentive for purchase rather than passing around, without getting in the way of operation. Some critics complain that the PSK could become a problem if, say, a user has four or five applications that all require their own PSK. I believe that to be a long range guess that needs no current attention.

Figure 1, page 257 shows the main operating screen, with an image loaded and a few lines of text overlaid. Resulting composites can be saved to a new IMG file and used in any DTP program. Headlines, for instance, can be scaled up to 999 pixels high, filled with your choice of patterns (see Figure 3, page 257) and then imported as an image into your publishing software. The artistic possibilities are endless.

Pixel editing is one of the most important features, and Figure 2 shows a chunk of the image from Figure 1 in the "fat bits mode," where you can hack away at the graphic one dot at a time. Figure 3 shows an Atari Fuji, first as a raw scanned image with flaws and voids, and next as cleaned up and ready for use. It also shows the variety of standard fills, but the user can even define his own fill by selecting another area of a graphic to be used as a pattern. "Lasso Mode" allows chunks of image to be used as brushes as well. There is much, much more as well. But that's enough for here.

How is Touch-Up to operate? It is rock-steady, impossible to crash (I tried!). This alone is rare and praiseworthy for any major application in release 1.0. However, the myriad of options, modes, and features make it hard to master. I think it unlikely that any normal user will get something usable out of his first few attempts on Touch-Up, but with time and patience, it will get easier. G + Plus should make it faster as well.

Touch-Up is not for everybody. The hefty (by Atari standards) price of nearly $200 (discounted to as low as $120 at some dealers) will chase some users away, and obviously it is of no use to casual gamers and weekend word processors. Touch-Up is a finely crafted precision tool, to be used by image craftspersons for serious uses. As such, it is certainly not overpriced. It is very much the flip side of what Easy-Draw is for vector graphics, a professional tool for bit-images.

Migraph has plans for continuing the upgrading of Touch-Up. Currently the IBM version has full attention, and some new features will appear there first, then be added in an upgrade for the ST series. These include more formats for input and output files (MSP, APS, etc.), direct scanner support for input, and additional editing functions. Some of what is to come is clued by several missing or light icons on several internal menus. Also in the works is the IBM version of Easy-Draw, and then perhaps an integrated package of both graphic tools for both ST and IBM. Support continues to be strong for Migraph's products both domestically and overseas. A unique and quality line like this one creates its own market, and is well deserved.

Migraph, 200 South 333rd Street, Suite 220, Federal Way, Washington State 98003. 800-223-3729. ●

ATARI ST NEWS & COMMENT

by John Nagy

There is so much to tell this month! Things are moving at Atari Corp., both internally and externally, lots of shows, new products, and more. As I will run out of space here, please look for more general Atari items of interest to ST users in my 8-bit Atari Note And Point article as well. It is elsewhere in this issue of *Computer Shopper*.

Corporate shakeups include resignations, terminations, and reorganization. According to information I just received, a major and very new officer has already joined the "out" list. More on this next month after I can fill in the details. Definitely gone is Cindy Claveran, Atari's former User Group Coordinator. She replaced Sandy Austin less than a year ago. Cindy resigned in March to take a better position in another company. Sig Hartmann's office is standing-in for the club work until a new coordinator is selected. Sig has been doing a bang-up job impressing the groups lately, being more vocal, accessible, and open than most of us have ever seen at Atari. He has spoken to a number of club meetings around the country, and has yet to have anyone get publicly critical of him. Rare.

Remember Federated? Atari wishes they didn't after steadily losing money, even at Christmas, Atari put the Federated Group of 90 some electronics stores on the table. Effective January 1, 1989, Federated became a "discontinued" division of Atari. That does not mean they were closing the stores, contrary to some interpretations. What it does mean is that Atari isolated the Federated portion of their operation and slapped a label on it that protects the rest of Atari's ventures from being adversely affected on financial reports. Nothing operationally changed at the stores, which are now officially for sale. Greg Pratt, a major Atari financial officer, has been attempting a leveraged buyout of Federated, but at this time it is unclear if he will succeed. Other players in the market include Silo's and Circuit City. Some change will need to occur this year, as "discontinued operations" look bad on the books if they continue for too long. Losses and reserves for Federated have been fixed by the move at 100 million dollars. Still pending at this writing (but probably headed for settlement) is Atari's suit against the former owners of Federated for allegedly misrepresenting the value of the chain of stores.

The same financial report that announced the new Federated status also pegged Atari's net worth at $83.2 million, with sales up nearly $100 million in 1988 over 1987, yet earnings in the final quarter of 1988 were $15.2 million, compared to $31.3 million the previous year. Stock market prices of Atari have not moved appreciably in many months. The annual report ended with this enlightening thought: "If anticipated demand for our product grows and our new products meet with success in the marketplace, 1989 should be a good year." Yikes.

March also saw another "on-line conference" with Sam Tramiel. You may remember the last one, on CompuServe. It was less than dramatic, with more dodges than answers. Fortunately, this one, on GEnie this time, was quite a turnaround. Sam gave quite a lot of specific information and was repsonsive to a lot of specific questions. Although much of what was discussed was either already known or rumored, hearing it from the boss made it worthwhile. Tramiel, Atari's Chief Executive Officer, spoke of the new products that were shown at the Hannover, West

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BEWARE THE VIRUS!

by Geoff Hart

Introduction And Background

Until recently, I was complacently content that computer viruses and their unpleasant kindred had confined themselves to the world of IBM. This was only fitting, as I felt that anyone who would purchase a living artifact from the world of computer prehistory deserved what they got. But then my brother-in-law, an Amiga owner, informed me that a substantial portion of his public domain disks had been wiped out suddenly and inexplicably, and a member of our Atari user group informed me that his hard drive had been erased without warning when he tried out some new software downloaded from a BBS. Friends, it seems that those dreaded software saboteurs have arrived in the world of the ST. If you will bear with me, I'll describe the problem we face and provide you with a few effective tools and techniques for reducing the risk of such sabotage.

First off, let me define what I'm talking about. The problem that faces us is one of sabotage, a deliberate effort to damage the software and data that we invested so much electronic sweat equity collecting. The byproducts of an otherwise talented programming mind that suddenly switched from the act of creation to that of destruction. Why this change has occurred does not concern us so much as the implications of the change. What faces us is the knowledge that there is now an electronic form of disease that is very much like biological disease in the way it infects the bodies of computers and the damage it does.

Types Of Viruses

A software virus is a small program that inserts itself into the body of your computer (that is, the memory and the storage devices) in much the same way that a biological virus inserts itself into your own body. It takes over the operations of your computer for some nefarious (or, at the very least, counterproductive) purpose, most commonly to make more viruses. The archetypical virus borrows some of those spare clock cycles your CPU isn't really using (let's face it, at 8MHz, most STs spend 99% of their waking lives waiting for you to hit a key) and uses the time to make more copies of itself. The most benign virus simply copies itself into the computer's memory until there is no space left for you to use; more malevolent viruses, like the one that infested my brother-in-law's disks, copy themselves onto your disks, consuming valuable space and eventually overwriting and destroying the legitimate data stored there.

A software tapeworm is an electronic parasite that works in a slightly different fashion. Tapeworms are particularly cunning programs that attach themselves to a formerly healthy piece of software and burrow in, hiding themselves and feeding on spare bits of memory. A tapeworm uses an innocent-seeming piece of software that you always used to trust to get around the computer world, to grow at the ex-

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► ATARI ST NEWS & COMMENT

Germany CeBIT Computer show, the largest in the world.

Stacy: The long awaited ST portable/laptop, it will be battery operated, have a 640x400 LCD screen (but will drive standard monitors as well), a built-in track-ball mouse substitute, and be available "worldwide" in July. The floppy drive/1 meg unit will be $1,495.00, and a two meg RAM version with a built-in 20 meg hard drive will be quite a bit higher.

TT: The problematic 68030 machine is expected in the third quarter of 1989. Although not yet finished or formally shown, it now runs both TOS and UNIX V.5.3.1. No price yet.

PC4: Another of the Atari PC line that seems not to be available in the US was shown, this one a VGA 286 unit with Microsoft Windows at $1995.

Folio: You may remember I told you about this one many months back. To be released anytime now, it is a Pocket computer, fold open with full standard layout (but small!) keyboard, and 128K. Expandable to 640K, it runs under a modified MSDOS 2.11, has an LCD screen with eight 40 character lines. Built-in software includes spreadsheet, database, and word processor. It is fully connectable with extra-cost cables, for porting to any other computer, modem, or peripheral. At $349 retail, this might be quite an acceptable travel companion.

Transputer/ATW: Over 100 units of the Atari Workstation are in the hands of developers now. No word on commercial availablity.

CD ROM: Also shown at Hannover and said to be available for sale in Europe, the CD read-only system is not yet in the USA. TOS 1.4 is said to be patched with a "MetaDos" to access the CD storage device.

Megafile 44: Another Atari brand hard drive, this one featuring the Syquest removable media mechanism. It will retail at $1195, with extra cartridges at $150.

Atari Software: DeskSet II, a full featured desktop publishing package, is expected to be released by Atari by the time this sees print.

TOS 1.4: Being distributed now! You may not be able to buy it yet, but final chip sets are in the hands of developers in large quantities. This is a major improvement over the current TOS operating system, and is being shipped in all new Mega series machines already.

Over 300 new dealers are said to be signed up domestically to be making Atari actually available in the U.S. Many of these deales are music shops, impressed with the market lead of Atari in the MIDI field.

In a final note about corporate news, a file posted on GEnie Telecommunication Service announced that, among other things, Atari had sold its entire 8-bit and game lines to Coleco. It was only an April Fools joke, said to be written by people inside Atari itself. Nevertheless, a lot of bad vibrations have gone around since, with far too many people taking it at face value. Pass the word-it was supposed to be funny. Ha!

News in third-party developers is also hot. The most speculative item is an "accelerator" board, said to be coming soon from John Russell (JRI), which will offer doubled speed in any ST for perhaps only $100. If this comes true, you can expect to hear it here first.

Gribnif has updated their wonderful Neodesk system, reviewed here a few months back. The new revision is available for $3 and your old disk, and is #2.02. Despite the tiny numerical increase, the changes are many. One item I mentioned as a trivial complaint, the inability to easily line up the disk icons, has been removed by a "snap to grid" option, similar to that in drawing and publishing programs. Other changes are less visual but more important. Memory management has been changed to allow buffered file copying, filling all available memory with several files if possible before writing. Also, a tally of copy pathing is available as it operates. More keyboard equivalents for mouse commands, a much improved print que (it was already great!), small changes in sorts, and a few other improvements round out this upgrade. Gribnif—NeoDesk ($49.95 retail), Box 350, Hadley, MA 01035; 413-584-7887.

Gadgets by Small has released version 1.9 of the Spectre software for their Macintosh emulator. It removes some pesky bugs and adds sound for the first time. Although still "experimental," the sound works well even if it slows execution noticeably. It also makes a number of "noisy" programs run without a crash. You can shut off the sound with a single keystroke to resume the "normal" Spectre speed, about 120% that of a real Mac! Also released from Gadgets is their very entertaining and helpful newsletter. This time it included hundreds of commercial Mac titles with a compatibility report on each. Spectre works on most all of those without disk protection schemes. A new product, the GCR, should be available this summer from Gadgets that will allow the ST to both read and write to standard Mac disks, during full emulation. (Yes, the Stacy and this accessory will create the first and perhaps only commercial available Mac laptop!)

Another emulation announcement was made by Avant-Garde. PC-Ditto II brings AT speed and full XT IBM compatibility to the Atari ST. Their original product, $89 now in version 3, PC-Ditto is a software only emulator, with remarkable compatibility but sometimes painfully slow performance. The new package is both hardware and software, provides nearly double the speed of a PS/2 Model 30, and retails under $300. Expect this to be a big boon for those of us who need IBM interchangability but don't want to give up ST fun and power. Registered owners of PC Ditto will get a coupon worth $150 off the new package. Avant-Garde Systems, 381 Point Drive, Jacksonville, Florida 32225; 904-221-2904.

Antic (the magazine people) has taken over GFA product distribution since MichTron parted ways with the German company.

Despite rumors to the opposite, SoftLogik has not stopped either development or support for the Atari ST version of Pagestream, a top line desktop publishing package. Although the Amiga version is being promoted and advertised and the ST version is not, SoftLogik explains that the ST version will continue to be produced and upgraded. They feel that the advertising and appearances at Atari shows is not paying off in sales at this time, but hope that "if Atari starts effectively supporting Atari" in publicity and ads, the SoftLogik position will be reversed. Version 1.6 of the ST Pagestream software may be available by the time you read this. SoftLogik, 11131F South Towne Square, St. Louis, MO 63123; 314-849-8608.

A last quick suggestion: find the public domain program "VF1.PRG." B. Wake provided this "Visifun" file to GEnie, and it is simple and pretty. Just another "floating color bar" demo, it is quick, small, and quite elegant to watch. Another pretty one is Darek Mihocka's Silly Spirograph Generator—mindless fun, says Darek. Look for SSG.PRG. Darek also has set of "Quick Utilities" recently put into shareware. They are a joy to use and provide several unique tools that most of us will use every day. I'll detail them next month, if I don't run out of space—again.

Also next month should bring some great reflections on both Comdex and the big World of Atari show from Disneyland. Expect more product announcements from third party developers at both! Til then, be sure to check out the coverage of Atari in the other columns here in *Computer Shopper*. A lot of general and corporate information in the 8-bit articles will affect ST users too, so don't miss it there!

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pense of your productivity. Like a virus, the tapeworm lives on unused clock cycles in your computer, but unlike the virus, a tapeworm doesn't necessarily reproduce itself. It may simply grow in size, or it may spend its life moving from disk to disk, browsing on data as it goes. There are few truly benign tapeworms, but malevolent tapeworms can set about systematically hunting down data to feed on, and replacing it with even more tapeworm. (John Brunner wrote a very interesting description of tapeworms in his 1975 novel *The Shockwave Rider*.) Unlike viruses, which typically move from disk to disk only when copy functions are performed, the "tapeworm" can patch itself into your operating system and intelligently navigate from place to place, reproducing when necessary, until it attains the goal it was programmed to seek. Tapeworms are said to have arisen from the innocent experimentation with a game known as Core Wars, where small pieces of program code moved about in the memory of a computer, hunting each other down until only one program remained "alive."

The final, most nasty, form of computer disease is the so-called Trojan Horse. As you'll recall, the Trojan Horse was a nifty giant wooden sculpture of a horse left at the gate of Troy as a gift from the apparently defeated Greeks. When the Trojans took the horse inside the walls of their city to add it to their collection of lawn furniture, the Greeks who had hidden inside the horse stole out under cover of the night, opened the city gates, and allowed their colleagues to sneak in and conquer the city. Odysseus, the most clever of the ancient Greeks, is said to have come up with the idea, and although he has been called a hero because of his voyage home after the war (chronicled in *The Odyssey*), reading this book left me with the impression that he was a pretty unsavory character. Maybe there is some Trojan in my background?

In any event, the analogy of the Trojan Horse is an apt one. It takes a cunning mind to come up with the idea that a piece of software seemingly intended as a gift is actually teeming with Greek warriors intent on invading your computer and destroying its data. One can admire the subtlety required to do this even while one despises the end result. And the end result of a Trojan Horse is almost always the same—the destruction of your carefully hoarded data (usually by a subprogram that formats your disk, erasing all the information on it). I suppose there are some Trojan Horses out there that have more innocent purposes, such as a surprise announcement in the middle of your video game that "We're here!!!." But it's the other sort we usually hear about. Worse yet, some of these programs are time bombs—they do exactly what they are supposed to do (e.g., play games, write letters, etc.) until a certain date comes up, then they explode on you. I don't have a battery-backed system clock, so my date is always being reset to December 1985 when I turn on the computer. I haven't been tempted to reset my clock since I first read about time bombs.

The purists will note that my definitions and descriptions are somewhat arbitrary. There are undoubtedly some pieces of software out there that have some of the characteristics of all three categories that I have described. For the moment, let my descriptions stand. They're functional enough to allow us to understand the many ways our computers can be invaded and conquered. And, more importantly, they enable us to see how some very simple precautions can safeguard our software, our effort and our sanity.

General Precautions

The most obvious precaution is also the most commonly overlooked: make a safe backup copy of your software, and hide the original disk somewhere safe. (See the following for details on safe copying.) The bathroom is not safe—you can't catch a computer virus from a dirty toilet seat, at least not yet, but you never know what we'll discover in the future. In any event, find somewhere dry, cool, and dust-free to store your original disks. A metal safe or strongbox is a very effective place, particularly since it will protect your diskettes from stray electromagnetic radiation. If the software is copy protected, contact the manufacturer about obtaining a second copy. Most will be quite willing to oblige you for a nominal fee if you assure them you're not planning to resell the copy to a friend. If all else fails, and while you are waiting for the backup copy to arrive, slide the write-protect notch on your disk so that it is physically impossible for any computer diseases to spread to the disk. (In this sense, computers are luckier than humans. No electronic saboteur can write itself to such a protected disk, since the write-protect notch physically prevents your disk drive from writing to the disk; by contrast, given enough time to evolve, many biological viruses will overcome virtually any protection the human body can come up with.)

The next step is to be a bit paranoid, and to assume that any piece of software that hasn't been ordered direct from a reputable manufacturer is out to get you. Public domain software should not be trusted. A software disease can only spread to an unprotected disk by installing itself in memory and making a copy of itself with the unwitting help of the operating system. If you are planning to use any "safe" disks, turn off your computer completely (do a "cold" reboot) before you insert the new disk. This will erase the computer's memory entirely, so that when you start up once again, all that is there is what Atari intended to be there (plus whatever accessories are on the disk you use to boot with—and the fewer of these, the better, since you may not be able to trust accessories that didn't come straight from Atari). A "warm" reboot (where you press that little button on back of the ST that restarts the computer without actually cutting power) is not good enough. Certain programs have been set up in such a way that they can survive a warm reboot and still keep on ticking. (A very good, benign example of this is the widely available public domain "eternal RAMdisk.") Assume that some day in the future, an equally robust virus will come along, too.

If you want to be sure that a disk is free of viruses, do not use any public domain software to either format or copy it; use only the software that comes built in to your ST in the operating system's menus. The reason for this is that we can trust Atari to have provided us with software that will do what it is supposed to do, even if we can't trust their new product announcements. If you use public domain software (much of which is far more powerful and flexible than the TOS format and copy programs), you have no way of knowing if a tapeworm has been inserted in the software. If you think this sounds alarmist, bear in mind that one infamous public domain program that was intended to protect IBM computers and compatibles from viruses had been borrowed by a virus programmer, re-released onto the bulletin boards, and turned out to be a Trojan Horse that formatted the owner's hard drive. For similar reasons, the only copy program you can trust is the one that comes with TOS, or a commercially available substitute.

To sum up: if you want to produce a formatted, secure, disease-free disk, do a cold reboot and then use the format function in the file menu provided by TOS. If you want to copy files, do a cold reboot, insert the source disk and then use the mouse to select the files to be copied (i.e., drag the mouse pointer across the specific files to be selected), then drag these files to the destination disk. Under no circumstances drag the disk icon itself, as you would do to copy the entire disk at once. "But you just told us that Atari wouldn't do anything nasty to us. Now you're saying we can't trust their disk copy function?" Well, I did tell the truth, but I just omitted a few choice items until the time was right to bring them up. One of the nasty things about viruses is that they can hide so well that they're virtually invisible without the use of a disk editor program (the electronic equivalent of a microscope—an electron microscope, in fact). If you copy the entire disk at once, these hidden files will be copied too in many cases. So copy the files rather than the whole disk, and if you won't use TOS, at least use a safe program to do so. There is another good reason to do this. If you have added and deleted many files to the source disk, the File Allocation Table will become a bit fragmented; that is, the gaps left by deleted programs won't be totally filled in most cases. If you copy the entire disk, you get an exact copy, right down to the unusable empty space; if you copy one file at a time, you end up with more usable space on the copy disk.

One special case of the "hidden virus" problem has been built into the way your ST operates on disks. To maintain conformity with the MSDOS disk format, the TOS format program was designed to provide for a boot sector on each disk you format. TOS mostly doesn't use this sector, other than for certain autoboot disks. For this reason, your ST can read a disk that has been formatted on an IBM PC or compatible (i.e., which contains a boot sector), but a PC cannot read an ST disk unless the boot sector has been formatted in a way that the PC recognizes. What this means is that there is a blank space on your ST disk that isn't ordinarily accessed. However, a particularly nasty class of viruses is able to install itself in that sector, and a whole-disk copy will copy the virus, too. Software that searches the boot sector for any hidden programs does exist (e.g., George R. Woodside's excellent public domain "Virus killer" program), and it tries to correct this problem by analyzing then sterilizing the boot sector and destroying the presumed virus. Since your ST generally doesn't use this sector, the procedure is painless and effective. The better solution is still to make sure that there's nothing there in the first place.

Nastier Still

Tapeworms can be particularly nasty because their cunning allows them to hide in otherwise safe-looking code. When they do so, they become undetectable short of dissecting the program with a disk editor and searching for telltale clues. (I lack this skill entirely, but there are some programmers out there who do know what to look for. In case you're wondering, this is a hint for one of you to write a followup article to this one to provide details.) The end result can be every bit as nasty as the original Trojan Horse—something that really does look useful and valuable but that contains a hidden danger.

This sort of sabotage can be detected in one very obvious way—to do its damage, the concealed program must access your disk and write to it (usually either to make a copy of itself or to format the disk). It follows that if your disk is write-protected, you are safe. Thus, when the game program that you are playing, which has no save game function and no high score file, tries to write to your disk, there's a good bet that something fishy is happening—and you'll be glad that the disk is protected. If you have a hard drive, this is more of a problem, since the innovative engineers who brought us this technology neglected to install a physical write-protect device such as we have on our humble floppy disks. (Nobody's perfect!) Fortunately, software protection exists. One public domain program that I have seen is called

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ATARI

APPLYING THE ATARI

by Jeff Brenner

This month we'll take a look at the new Express! cartridge for the 8-bit Ataris, answer reader mail, and hear from more 8-bit users who are making the most of their Atari computers.

New Products

From Orion Micro Systems comes Express!, a new terminal program in a 64K cartridge. The company writes:

"The Express! cartridge is a brand new terminal program written by Keith Ledbetter, the author of the popular Express! series of communication programs. The new Express! cartridge sports 64K of banked memory and is written in 100% assembler language, allowing Keith to pack in features that are not available in any other terminal program for the Atari 8-bit. Even though the program has been totally rewritten, you can still sense the user-friendly and bullet-proof environment that has always been a favorite feature of the Express! series of programs.

"The cartridge will work with any modem that has a corresponding "R:" handler available for it. This list includes (a) any Hayes-compatible modem used with an 850, P:R: Connection, or MIO, (b) Atari 1030 modem, (c) Atari XM301 modem, (d) Atari SX212 modem, and (e) Supra MPP modem.

"The Express! cartridge is built around a drop-down menu system identical to those that are popular on many other machines like the IBM PC and the Atari ST. The XEP-80 80 column cartridge is also fully supported. If you are using an XEP-80, the dropdown menuing system is replaced with a text-based, 80-column menu. This means you will no longer need two monitors (i.e. one for the terminal mode, one for the menus).

"Express! also has a full-screen, Action-type text editor built-in. This is a great feature to have, allowing you to edit the capture buffer or compose messages for uploading to Bulletin Boards. Supported features include cut and paste, line tagging, find and search/replace.

"The Express! cartridge also allows you to piggyback another cartridge on top of it. Then, at your command, you can turn off the Express! cartridge and run the cartridge plugged into the top of it! Or, you can turn off the Express! cartridge and the cartridge above it, making the OS think there are NO cartridges in your machine. You may never have to pull the cartridge out of your machine."

Other Express! features: supports any DOS (including the new SpartaDOS X cartridge); supports expanded 130XEs or 800XL allowing up to a 528K capture buffer; includes a DOS shell for quick access to common DOS commands; offers a full-screen text editor; supports any modem with the "R:" handler; supports 300/1200/2400/4800 or 9600 baud rates; supports Xmodem, Xmodem-CRC, Xmodem-1K (Ymodem), Ymodem Batch, ASCII and external windowed transfer protocols; runs external, disk-based programs; exits to DOS without loss of carrier to run programs while on-line; and more.

Express! is to be released June 1, and will retail for $69.95. For more information, contact: Orion Micro Systems, 2211 Planters Row Drive, Midlothian, VA 23113.

June Atari Show

ST-World Magazine will be sponsoring a number of "World Of Atari" shows supporting all Atari computers, including the 8-bit machines, the ST and Mega machines. The shows will feature seminars, workshops, computers and software, and have the backing of Atari Corp. The next shows will be June 24-25 at the Hyatt Regency Hotel in Dearborn, Michigan. For more information, contact Rich Taukijiat

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► CP/M COLUMN

the screen it will respond with 0987 00. You enter 02 (that is the number of characters for it to look for in the name of the program that you want to autoboot). Then when 098A 00 comes up, enter 53 (that's a C), then when 0989 00 comes up, you enter 53 (that's an S: that's CS for CalcStar). Then when 098A 00 comes up, you enter a period (.) to indicate you are through making changes. You should then enter D 0980 to see if it entered it right. Over on the right hand side it will now show a CS. Then do a ^C (control C.) Then still on the B drive, at the B> prompt type A:SYSGEN. At the source question, you press enter. At the destination question you type B. That puts SYSGEN with the CS in it on the disk in drive B. The only thing now is that when you want to leave CS by entering ;Q, you get rebooted.

Jack also sent me a CMDLN.COM file that came from a Kaypro utility, that he worked on so it would work on the Sanyo. In this case, you put the disk you auto-boot in drive A and the disk with the CMDLN.COM file in drive B. From drive B, you enter CMDLN and it responds: "Autoload string (* = none) >>". For CalcStar you would respond CS or if a BASIC program: SBASIC <programname>. It then sends to the A drive instructions for autobooting. Neat!

Your article in the February *Computer Shopper* was a big help to me in getting "WordStar 4 CPM Version" patched. The only thing that I can't get used to is he has programmed the enter key to do a ^KD (control KD,) that is Save to Disk. Since I am a hunt and peck typer and use the keypad extensively I use the enter key instead of the return key. I have saved this letter to disk at the end of each paragraph so far. I personally would rather use the control key and KD. I guess I'll have to call the guy and find out what to do.

{Cherp's note: Saving at the end of each paragraph can be a wonderful thing. The first time you lose a page and a half of work because you forgot to do that Control KD you'll want your WordStar repatched to do that save after every graph.}

I want to thank you {Cherp's other note: you're welcome} for putting my request in your article. Right off, Father Jensen of Superior, WI called and offered to help. Next came a letter from Ben Cohen of Chicago, IL and we traded disks back and forth about three times, before he admitted defeat. Since he didn't have a Sanyo with quad-density, he couldn't help me. I sure am grateful to him for trying. Next I had a message on my answering machine for Jack Frost (real name) of Morris, IL., he said he owned a Sanyo and thought he could help me. He also said that he was beginning to think that he was the only owner of a Sanyo in the country. As you read previously, he really came thru.

I had to laugh, Father Jensen thought I was pretty lazy that I couldn't type a "WS" or a "CS" to start a program! What does he have a computer for? It's suppose to work for you, not you work for it!

Robert Radel

Pedro's Letter To Robert

Put this little program in a subroutine anywhere you have room in your program and then call it when you first run the program.

Example:

Look at your program to see if the first five lines are empty. If they are then put the program as you see it.

```
1 RESET
2 OPEN "0". 1. "$$$.SUB"
3  ZB$ = "BASIC  "  "CHR$(34)
 + "TEST" + CHR$(34)
4 PRINT #1.
CHR$(LEN(ZB$));ZB:CHR$(0)
5 CLOSE 1
```

Replace TEST with the name of the program you want to autoexecute. If in the program you want to autoexecute and you don't have room at the beginning, then make the previous program a subroutine. Put it somewhere or at the end of the program:

{Pedro then rewrote the previous lines with line numbers 20000 to 200060.}.

Always replace "TEST" with the name of the program you want to autoexecute.

After you do this, put at the beginning of program this statement:

```
GOSUB 20000
```

If you need more assistance, please call me.

Pedro

Followup From Robert

Robert wrote me another shortly after the first. Here it is.

Dear Cheryl:

In my haste to write and thank you for getting my wants known, I forgot to mention that there is a printing eror in the Sanyo Patch in the February issue of *Computer Shopper*. I am assuming you don't want to put a letter "D" on the screen when you use the left arrow!

In the fifth line from the end of the patch (= 'S'-40H,'D',00,00,00,00,00,00) the D should be replaced with a pair of zeros. There should be seven pairs of zeros following the "40H."

Then in using the "Everton Publishers" address from a previous issue and sending off for the genealogical material that they have, I found out that it is only for IBM and compatibles. I have a daughter-in-law who is researching our family, and in a very short time the material is beginning to stack up. She is casting an eye on my computer as a place to store this accumulation. So I need to find a genealogical program fast to keep peace in the family. So help me one more time!

I'm beginning to get use to the enter key being a ^ KD key (save to disk) on this patch that you published. I have remembered, so far, to use the return key at the end of each paragraph. Wonders never cease!

Keep up the good work for us CP/M'ers. Thanks again.

Robert Radel

If any of you out there know of a good CP/M program for genealogical work, please write and let us know.

That's it for this month. Cherp!

Companies Mentioned in Article

Cranberry Software Tools, P.O. Box 681, Princeton Junction, NJ 08550-0681.

GEnie, 401 North Washington St., Rockville, MD 20850. 800-638-9636.

James River Group, 125 First Street, Minneapolis, MN 55401. 612-339-2521.

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NOTE AND POINT—ATARI 8-BIT NEWS AND COMMENT

by John Nagy

Atari 8-bit news continues at a slow but steady pace this month. Although the corporate focus is "all ST" for new products. See the rundown on them in my ST News column elsewhere in this issue, along with a lot of corporate news that effects all Atari owners in the long run.

Perhaps the biggest news are a couple of "facts" that I need to refute: That Atari has sold the 8-bit line and games to Coleco (an April Fools prank that has upset many); and that Atari is "closing" Federated (selling, hopefully. Closing, No.).

In what must have seemed like fun at the time, a few Atari and GEnie telecommunication system employees wrote up a bogus "press release" from UPI, posted it on both the 8-bit and ST areas of GEnie, as well as banners on log on, directing all users to immediately go and download the release. Billed as "important news that will affect all Atari owners," nearly a thousands users rushed to read it. Most believed it at least at first, and many may still.

The April Fools prank (released four days early, when it was least expected) detailed how Atari had sold the 8-bit and game line to Coleco Toy Company for "in excess of $50,000," was moving its corporate headquarters to Germany, and was introducing a new workstation called the Atari FU. A close reading turns up countless cues to the absurdities, but many media people were even taken in at first. No blatant clue to it being an April Fool joke was included, and quick readers simply assumed that their worst fears were coming true. Atari reported lots of worried calls.

Please help quash any leftover doubts. Pass the word, it was supposed to be a joke.

Atari has committed to full support and appearances at many major computer show in the coming months, and the World of Atari shows all have pledged to show the full array of computers and products of Atari—that means us 8-bitters too, folks. Don't miss these shows if you can help it!

Scheduled for appearances at Comdex and the World shows is Diamond, reviewed last month in this column. The 8-bit cart is a graphic environment similar to the ST's and Macintosh's GEM. Applications using Diamond (including Write and Paint) should be ready for showing at them, and I'll have details on them next month. Early outlook: good!

Still unavailable at this writing is the competitor for Diamond, "GOE," from Total Control Systems. Curiously, some reviewers have been panning Diamond by "comparison to GOE" despite the fact that GOE is as yet only a list of specifications. However, the programmer for GOE, David Sullivan, has told me that his experiments with Diamond lead him to believe that applications written specifically for either system can likely be used on both systems. A simple and small shell or interpreter program could do the trick, although a few unique functions of each system may prevent alternative fonts or other higher functions when in "translation" mode. If this works out, this should accelerate interest and sales in both carts and applications for both systems. Many mass marketers are quite intrigued with the Maclike interface on such an affordable machine as the Atari 8-bit, and these systems may be responsible for the reappearance of our machines in the Sears and Service Merchandise stores in the near future.

Also no news yet on the Turbo 816 from DataQue, still in beta testing.

Speaking of shows, one traditional show has suffered of late. The West Coast Computer Fair, long a respected event for user groups and vendors, was a letdown to many this year. Although reasonably well attended, the California show was largely an MSDOS sale, with about the only Atari presence being also about the only user group appearance. Attendees had fun, but the bloom seems off the WCCF rose.

Game cart of the month: Crime Busters, from the guy who brought us "Barnyard Blaster. This new game uses the Atari gun in a 12-area bad guy hunt. Blast away but avoid the civilians! Reviewers have praised this game, although some have complained of the accuracy the game demands.

PC Pursuit, a national subscription service that allows long distance modem calling at greatly reduced rates, has now firmed up their new charge structure. When they announced some months back that they were putting a 30 hour a month cap on the previously unlimited service, users reacted hotly, causing a delay in implementation. Effective July 1, rates are $30 one time fee, plus $30 a month, for 30 hours a month (non-prime time). Hours past 30 are billed at $3 an hour. A "family" rate of $50 a month gives 60 hours access. Handicapped members qualify for 90 hours for $30. Cities and area codes available are somewhat limited but still expanding. PC Pursuit, Telenet/Sprint, 12490 Sunrise Valley Drive, Reston, VA 22096; 1-800-835-3638.

GEnie has also modified their rates. Effective May 1st, the prime hour rates fell from $35 an hour to $18 for all baud rates, while off-prime (evenings, weekends, holidays) changed in several ways. 300 baud is still $5.00 an hour, while 1200 has gone up from $5 to $6.

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► APPLYING THE ATARI

503-673-2259. If your organization or club is sponsoring a show featuring or including 8-bit Atari computers, please write in and let us know about it (at least three months in advance).

Reader Mail

Dear Jeff:

I have been reading your column for several years now, and enjoyed the tips and information it has given me. I have run a BBS now for two years and its main objective is to have the information on doing your own upgrades, fixes, and other self-help projects on line. I have written to many of the users groups and gained their information and have found other sources as well. I run the board 24 hours and have an extensive library of back issues to *ANALOG*, *Antic*, and even some mags that are off the market to refer to if need be. I even have information on where to get dot-matrix printheads rebuilt—I admit I don't have a hard drive but I do have 8 drives plugging away, as well as a 1200 baud modem with the software of Express Pro!

I read the articles of the problem with the DMP 105 printer, and it does have addressable dots, however it would not work with Print Shop or other programs that require a special character set. Trent Dudly had made a printer driver which allowed me to make a list of a program with the special character set—I don't use it often but I do have a copy in my files.

I hope that you can use this information. Incidentally, I have used technitron's power supply instructions that you mentioned in the column and the board has not gone down in over a year. I even added a few bells and whistles, such as a Radio Shack one-inch fan to keep it much cooler, and the MIO upgrade they had available.

L. A. Sneeringer
Ft. Lupton, Colorado

In response to the excuses offered by several major software manufacturers for cancelling their 8-bit software titles (because the 8-bit was "obsolete" or "dead," and that 8-bit owners should and would readily switch over to new machines) I invited letters from readers who were benefiting greatly from their 8-bit machines. Here are a few:

Dear Jeff:

My system consists of an 800XL (Newell 256K), two 1050 drives (both with Doublers), Hitachi color monitor, PR:Connection, Supra 2400 baud modem, MicroStuffer (Supra), 64K printer buffer, and an Epson-compatible 9-pin dot-matrix printer.

In addition to working, I am the Business Manager of a local Drum & Bugle Corps and am a member of my Unions executive. This makes me a very busy person, but Atari helps me manage things more effectively.

Word processing is my main use (Atariwriter +) but not far behind is telecommunications (keeping up to date on the local BBSs as well as nationally with a networked BBS (run on an 8-bit Atari using Express Pro). My noted activities keep me busy with mail/membership lists (Synfile +), posters and other flyers (Printshop and Newsroom).

My home uses include all of the aforementioned with the inclusion of an up-to-date inventory.

This system is so well used (almost daily) that it was necessary to buy another complete system so that the kids could do their things without an argument. The kids regularly do school word processing for their homework assignments.

The Atari is "famous" for its reputation as a games computer. I, however, find that the only time we play games is when company comes over!

There has been much talk of the 8-bit Atari being dead. Admittedly, it is in critical condition, but I can assure you and your readers that my Atari computers lead very full and useful lives and will continue to do so for long into the forseeable future. Now, if only hard drives were a little more reasonably priced, hmmm.

Lastly, keep up the good work in *Computer Shopper*. I consider it my premier source of current 8-bit news. Bravo!!

Bob Berberick
Hamilton, Ontario

Dear Jeff:

I have been happily applying my Atari 800 since it first came out. I use AtariWriter, various games, and a communications program for Packet Amateur Radio, besides my own programming efforts. The 800 is great for morse code, teaching music theory, and publishing my ham radio newsletter. Where are the Atari ads in *Computer Shopper?* My friends with Commodore and Radio Shack computers have had to get them repaired over and over but my old 800 keeps right on working (the space bar needed lubrication once, though). I use a 1050 drive, ADS 2000 printer, Xetec interface, Pac-comm TNC modem for ham radio, and an Atari 400 with Big Blue printer and Protecto interface for the kids using the junky 410 tape unit (yuk!).

Larry W. Garens
Brady, Texas

Dear Mr. Brenner:

The letters you printed in the March issue of *Computer Shopper* were encouraging, but especially the one from the Albert family. I feel the same way about the XL/XE computers as they do.

I have been using Atari 8-bit computers for about five years. Presently,

TEXAS INSTRUMENTS

TI FORUM

by Barry Traver and Jonathan Zittrain

99/4A Still First Love

In a previous column, I reported an informal, non-technical conversation concerning some features of the TI-99/4A often not known by owners of other computers. I indicated that we "can put 16 colors on the screen at one time, and the automated sprites will stay in motion with no attention from the CPU." The Editor/Assembler manual states it a bit more precisely: "After you start sprites moving, their motion continues without further program control." The point about the sprites is simply that—in contrast to a number of other computers—so far as sprite movement is concerned, on the TI you can "set it and forget it" (providing that VDP interrupts are enabled, of course). True, the CPU is actually involved keeping them moving, but the work of the CPU is invisible (somewhat like multi-tasking?), since it can be doing something entirely different at the same time (e.g, figuring out square roots). That's not true with many other machines. The point about the colors is that other computers may also advertise 16 colors but only allow 4 different colors on the screen at the same time. Not so for the TI-99/4A (now you know the reason for the show-off color bars on TI's title screen!).

My purpose in bringing out these things was not to put down any other computer—each has its advantages and disadvantages—but simply to show that the TI-99/4A has its own definite strengths, many of which are unknown by the general public. It is not without reason that TIers are so loyally devoted to a computer that (in certain areas at least) still has an edge over more recent competitors often costing much more. I have other computers myself (I own at present a Myarc 9640 and an Apple II clone, and I expect sometime to get around to be getting an IBM clone), but find that my /4A can still do things that they cannot (even as they can do some things the /4A cannot). Incidentally, lest it be thought from these remarks that I may be thinking of "switching over" to another computer, let me state that I have absolutely no plans to give up my TI-99/4A. It is the one on which I still spend 90% of my computer time, and I do not expect that to change in the near future. The others are supplements to (and not replacements for) my TI, which continues to be my first love.

The Myarc HFDC

A surprisingly popular item in the TI community right now is Myarc's HFDC (Hard & Floppy Disk Controller), put out by Myarc, Inc., P.O. Box 140, Basking Ridge, New Jersey 07920. (For further information, you can call the Alabama office at 205/854-5843.) With the hefty price tag involved ($325 plus cost of hard drive, which means another $100 to $200), you might not expect this to be a best-selling item, but an unusually large number of TI-99/4A (and Geneve) owners seem to be using this means of substantially upgrading their systems.

Perhaps part of the reason for the interest is that the HFDC offers real competition to the traditional RAMdisk, especially now since chip prices for memory expansions have been so high. For the same cost as a 512K Horizon RAMdisk (maybe $425), it is possible to have a Myarc HFDC with a 10 megabyte hard drive (if you can shop around for the hard drive and know what you're doing). A number of RAMdisk dealers have reported that their sales have declined, and one reason may be that people have been spending their money purchasing hard drives instead.

Many TIers who started out with cassette systems remember what a joy it was to be able to move to a floppy disk system. Some of them have also had the joy of seeing the similar increase in speed that a RAMdisk can offer. Well, Myarc's hard drive operates at a speed comparable to a RAMdisk, unbelievable as that may seem for those who have not seen it in operation. If the hard drive is as fast as a RAMdisk, offers much more storage space than the largest RAMdisk, and doesn't cost any more than a 512K RAMdisk (assuming a RAMdisk utilizing static RAM rather than dynamic RAM for comparison purposes), it's easy to understand why many are deciding to purchase a hard drive.

Myarc's HFDC has a lot going for it. It supports up to four 5 1/4" or 3 1/2" drives, mix or match, and all standard disk formats, e.g., SS/SD (98K), DS/DD (320K or 360K), or DS/QD (640K or 720K). Unlike Myarc's earlier (and much more expensive) "personality card," the HFDC interfaces with most standard, off-the-shelf, hard and floppy disk drives. It has its own built-in real time clock for time-and-date stamping of files, and Myarc's Disk Manager V (popularly known as MDMV) sets a new standard for disk managers. (As a Sysop, I do have a minor complaint about how Myarc handles file headers, however. For its own purposes, the HFDC makes use of a certain "reserved bit" in byte 12 of the file header. In most situations, setting this bit doesn't hurt anything, but if it is set, the disk cannot catalog properly from a BASIC or Extended BASIC catalog program.

► APPLYING THE ATARI

my system includes a 130XE, two double-density 1050 disk drives, a Star NX-1000 printer, and an SX-212 modem. A 13" color TV (with antenna removed) serves very well for a monitor.

Before I purchased my first Atari, several of my science students (I am a secondary school science teacher) began asking questions about computers in general. This was "way back" in 1984 when the average home computer system cost something less than $1000. With my very limited exposure to computers, I couldn't answer many questions and determined to buy a home computer to "learn on" for myself. Then as I learned, I would pass my knowledge along to the kids.

The popular and affordable computers on the market in those days were Commodore 64s, Tandy 8-bit models, the TI, and the Atari models. IBM and Macintosh models were out of the question financially, so I studied as much information about the various modes as possible. Then around Christmas, the XL computers were released and I bought a 600XL with a 1010 cassette device on Christmas eve. How well I remember that Christmas vacation of late-night sessions with my Atari and Atari BASIC. My greatest achievements were in producing a BASIC program to computerize the carts and logistics of a favorite war game and another program that tracked and automatically averaged my student's grades. What had previously taken from 3 to 4 hours to do was then done in about 30 minutes! Later when the disk drive was added to the system and the program rewritten, the time further decreased to about 5 minutes! While all the other teachers were sweating it out the night before grades were due, I was playing Star Raiders!

Our school had nothing in the way of computer instructions and my physics students were begging me to do something for them, so after much arm-twisting and pleading, I managed to persuade our administrator to allocate funds to set up five 600XL cassette systems and a time slot for me to teach BASIC programming. The next year, the class grew and we were forced to incorporate other aspects of computer usage besides programming to accommodate non-math oriented students. Now our school has a computer laboratory with twelve 64K Ataris, each with its own disk drive and color TV. We also have three XMM801 printers.

In the process of developing the computer lab, a curriculum was also needed. Taking notes from various magazines, books, and personal experience, I used TextPro to type up a 140+ page curriculum for our high school students. It covers elementary programming, word processing, spreadsheets, databases, and graphics. It also includes complete instructions for the public domain software that is used during the coursework. In addition to a high school curriculum, an elementary curriculum was added to teach rudimentary aspects of BASIC and LOGO.

Word spread to other schools of the success we were having at a fraction of the cost that most schools were spending for Apple or IBM computer labs (we spent about $5,000 for the entire lab of 12 computer systems). Two other schools asked me to come and set up similar labs in their facilities and to train a staff member to use and teach with the Atari computers. At last report, they are doing just fine and one school has continued to add hardware.

The 130XE does everything I need it to do. Perhaps the newfangled 16- and 32-bit computers can do the same things my 8-bit can do in a fraction of the time, but I am perfectly happy with my system and intend to stick with it, come what may.

Michael E. Bennett
Augusta, Georgia

Readers who are interested in the curriculum materials developed by Michael (including programs and documentation) can send him a long, self-addressed, stamped envelop for more information. Write to: Michael E. Bennett, 2207 Glynn Arven Court, Augusta, GA 30906.

8-bit Software

If you are trying to locate 8-bit software that has been discontinued or cancelled, please write in and let me know. I will be coordinating requests from individuals and users' groups to see if arrangements can be made with various manufacturers to re-release discontinued products or to locate old inventory. Also, if you're a software manufacturer or distributor with a substantial inventory of 8-bit software, please let me know. I'll print further details in a future column.

Next Month

We'll have more Atari 8-bit information, new products, reader mail, and a reader-submitted utility program. Readers' questions, comments and contributions are welcome. Address all correspondence to: Jeff Brenner, "Applying The Atari 6/89" c/o *Computer Shopper* P.O. Box F, Titusville, FL 32781. ●

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► TI FORUM

Later versions of MDMV reset this bit when a file is copied from the hard drive to floppy, but when a file is uploaded to a network directly from the hard drive itself rather than from floppy, that bit remains set.)

With the arrival of Myarc's HFDC, can RAMdisks survive? I believe the answer is yes, if they are able to do other things other than serve as RAMdisks. If a memory expansion card can only serve as emulating a disk storage device, it's difficult to see how it can compete against the HFDC (unless you are talking about a RAMdisk costing less than the HFDC plus hard drive). BUT a memory expansion card ought to be able to provide other services, and often can do so if appropriate software is provided. That is to say, a memory expansion has the potential of doing a number of things that a hard drive cannot do.

In next month's column, we expect to be reviewing a very nice memory expansion card from Rave 99. It costs as much as a Myarc HFDC plus hard drive, but it has its own attractive features. Like the Horizon RAMdisk, it uses static RAM chips and is thus very dependable for memory retention of contents (unlike the less dependable Myarc memory card which uses dynamic RAM chips), but unlike the Horizon (and like the Myarc) it allows you to run Myarc Extended BASIC II, offering you in a sense the best of both worlds. It can pretend that it's a supercart, and there are other things that it can do that a HFDC cannot (e.g., when software is available, it can provide a print spooler), so the battle is not over. We've come a long way since Foundation offered its rather limited 128K card, and—with the competition from the Myarc HFDC—I expect that we may finally get to see some of the things memory expansions are able to do (including the obvious one of providing additional addressable CPU RAM).

Incidentally, as with some of its other products, Myarc offers an optional extended warranty for those who desire such (the standard warranty covers 12 months parts, 6 months labor).

TI BASIC On The 9640

Why would anyone want to combine the old, standard TI BASIC with a new Myarc 9640? Bob Sherburne, president of the Southern Nevade 99/4A Users Group, has an answer. Some programs actually were written in console BASIC, but required the Editor/Assembler module to be plugged in as well (Joy Paint '99 is one such program).

To accomplish the same effect on a 9640, one needs a Gram Kracker. Turn the GK loader off and save GROMs 1 and 2. Name the GROMs "BASIC" and "BASIC1" and save to a newly initialized diskette. Then, load up a sector editor and change the first word of sector >22 from 0002 to FF02 and save the change to disk. BASIC can now be loaded into GPL just like any other cartridge.

To load BASIC along with the Editor/Assembler, save the E/A cartridge to disk with the Gram Kracker and name it "BASIC2." Then, change the first word of sector >43 from 0003 to FF03. Now when BASIC is loaded into the GPL environment Editor/Assembler will also be included on the main menu.

Help For The Isolated User

You may remember our report in a previous issue of Jim Peterson's incredible offering of public domain software (Tigercub Software, 156 Collingwood Ave., Columbus, OH, 43213). Peterson offers copies of his organized collection of 200 public domain diskettes for $1.50 each postpaid in the U.S. and Canada, $2.00 overseas by airmail.

Well, the Macon 99/4A Users Group in Macon, Georgia, is jumping on the same bandwagon. They are offering the club library on disk to any full member of the club (membership is $20 per year). The process works fairly straightforwardly. First, the club's catalog is printed in small portions in the newsletter. The member wanting copies must initialize however many single-sided, single-density diskettes are needed for the programs ("flippies" are permitted).

The member then puts the disks into a mailer with his or her own address filled out, including return postage. The mailer can be sent in another package, along with a note listing what disks are requested. To become a member of the club, send dues to The Macon 99/4A Users Group, c/o Don Alexander, 635 Villa Crest Ave., Macon, GA, 31206.

Between Peterson and the Macon 99ers, no TI user should feel left out!

The Blue Scare Debate Continues

In a previous column we asked for opinions about those 99/4A users groups that initiate IBM special interest groups to revitalize the overall club. Gary Cox, president of the Mid South 99 Users Group (which, incidentally, has an excellent newsletter for $15/year, P.O. Box 38522, Germantown, TN, 38183-0522), adds the following to the debate:

"My opinion on this matter is that we should stay strictly TI and Geneve as there is plenty of user groups for IBM compatibles already and mixing two computer types can lead to trouble and it is difficult to serve both."

In fact, many of the officers of our group (including myself) own an IBM compatible as each system has its advantages and disadvantages, but we still stick with our TI activities. Of course, if it is a question of a group going under or staying alive an IBM compatible sig in the group would be a better alternative than no group at all."

Any other opinions?

Attention All Adventurers

Mickey Schmitt of the Pittsburgh Users Group (P.O. Box 8043, Pittsburgh, PA, 15216) is attempting to put together for publication the entire set of adventure programs written for the

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► NOTE AND POINT—ATARI 8-BIT NEWS AND COMMENT

from page 284

2400 fell from $12.50 an hour to $10. All costs are exclusive of any connect surcharges, sometimes collected by local service carriers (about a dollar an hour).

User groups across the US and now a few other countries as well have been taking advantage of the Z*Net newsletter supplement offered by Ron Kovacs. The maker of the on-line *ZMagazine* weekly has been producing the monthly 12 page Z*Net since March, and has over 20 club applications carrying the supplement to a circulation of over 3,000 copies. Regular columnists include Matt Ratcliff, Darek Mihocka, and many other well-known personalities. It features very up to date news and reviews, and is professionally produced, ready for duplication by participating clubs. It carries advertising and thus can even pay the groups to include the supplement in their newsletters. Your club probably gets a participating Z*Net newsletter in exchange from one or more of these clubs. Look it over and consider it for your club. Z*Net goes a long way to help frazzled newsletter editors find quality material to print, with no "typing in" involved. Contact Ron Kovacs at *ZMagazine* on GEnie, or at Box 74, Middlesex, New Jersey, 08846; 201-968-8148 for more information.

A last technical note that has done a lot for a lot of users: Is your 1050 disk drive making you climb the walls? More and more units are having the same problem: some disks read some times. The problem is often failure to grip the disk itself tightly enough to rotate it in the disk sleeve. This is fortunately very easy to remedy. Open the drive case, and look for the lever that is attached to the turn-down handle. It has a cam on it that pushes down on the hinged top plate that actually clamps the disk. Just put a few layers of disk labels between the cam and where it touches the plate. This will increase the pinch tension enough to eliminate the problem. While you are in there, think about putting a little bit of silicone lubricant on the head rails—you will be amazed at how much quieter the drive will run!

That's it for this month, next month I expect to have hot stuff to tell you about from the World of Atari show in Disneyland! Don't miss the other Atari columns in this issue of *Computer Shopper*. ●

► BATTLE OF THE BASICS, ROUND 2

from page 258

disk memory block and redirect their compilation-to-disk paths to point to the RAMdisk—the obvious reason being to save a heck of a lot of time. Since HiSoft only calls the disk when it needs to import a library, some of these people may choose to divorce themselves from these poor, neglected accessories, or at least save them for whenever they're downloading a 100K+ file from DELPHI.

With LDW 2, even if the source code resides in a RAMdisk, the compiler constantly references its own program disk throughout the compilation process, forcing an expenditure of maybe a minute (two or more for those not endowed with a hard drive) for a program which would otherwise seem to metamorphose into self-executable form within HiSoft's protected block in under five seconds.

So without the long waits compiler users had grown accustomed to (keeping a cot next to the computer used to be handy), the HiSoft compiler is almost like programming with an interpreter. If the compiler finds a syntax error in the tokenization process, it directs the editor to display the line in question, with the cursor positioned at the error point. HiSoft's editor is not "intelligent" like GFA's, though, so it can't check your code as you're writing it. As a result, some glitches in the source code may become misdiagnosed by the HiSoft compiler.

Now would be as good a time as any to pit our three BASIC products against each other in the field of error-handling, so here's an anecdote from personal experience: Once when working with HiSoft Pro, I created a variable "in," which was to refer to an Integer Number; but I later thought the choice of letters might become confusing to a novice since "in" is also a word in itself. So I decided to change it to "ni," as in Number of Integers. Without thinking too heavily, I had the search-and-replace feature change all instances of "in" to "ni." It had not yet registered in my otherwise word-conscious brain that this act would change all my PRINT statements to somewhat less meaningful "PRNIT" statements.

Without noticing this blind aberration of the program structure, I attempted compilation and, as you might expect, an error message was generated, but one stating the compiler could not parse my line labels. I figured out the problem easy enough: The com-

► ZOETROPE: THE ANIMATION SYSTEM

who can blame them for being cautious. They are obviously trying to gauge what Amigaians needs are. Coming upgrades will center first upon Zoetropes overscan capability, and later upon optional resolutions. Other aspects like sound and HAM weren't discussed. Antic also offers some other Amiga packages, and in keeping with the visual nature of the products that I review, I would like to mention one of their product lines—their 3D libraries of shapes.

Each of the four offerings so far retails for about $35.00 apiece, and I find them well worth the price. The four packages are compatible with Sculpt 3D and 4D from Byte by Byte corportion, but with the translation package offered by Syndesis, these libraries can be transformed into other formats. I have reworked them in just such a fashion to the Turbo Silver mode (from Impulse Software). There are at the moment, four design disks, with more on the way:

Future—spacey ships and stations.

Architecture—my favorite—a wealth of architectural design models from doorways to cupolas and beyond.

Microbot—fantasy robotics.

Human—very useful skeletal frameworks in both male and female selections.

If you use any of the Amiga 3D packages on the market for static design or animation, you'll want to investigate these packages.

Zoetrope: The Animation System
Antic Software, 544 Second Street, San Francisco, CA 94107; (415) 957-0886.
Suggested retail price: $99.95. ●

SUPER FDC-4 port
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14" Multisync Monitor / VGA Card	$1375.00
Hard Disk Subsystems:	
20MB Hard Disk (ST-225)	+$220.00
40MB Hard Disk (ST-251)	+$350.00

ESSENCE 88-10
XT10MHz TURBO SYSTEM

- 4.77/10MHz 8088 Microprocessor
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20MB Hard Disk w/Controller	+$255.00
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EGA System 14" EGA Monitor / EGA Card	$1090.00
VGA System 14" VGA Monitor / VGA Card	$1170.00
14" Multisync Monitor / VGA Card	$1275.00
Hard Disk Subsystem:	
20MB Hard Disk w/16 bit Controller	+$275.00
30MB Hard Disk w/16 bit Controller	+$330.00
40 MB Hard Disk w/16 bit Controller	+$415.00

** One Wait State is preset

AT I/O CARD
(2S, 1P, 1G) (Com 1 - Com 4)
$35.00

BABY AT BARE BONE SYSTEM
Baby 12MHz 4MB M/B
200W Power Supply
Mini-AT Case
$319.00

XT BARE BONE SYSTEM
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150W Power Supply
AT-jr Case
$139.00

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386/ 25 MHz w/1MB Ram(64KCache)	$1995.00
386 SX 16MHz w/IMB Ram	$1195.00
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AT 12 MHz 1MB M/B (Full size)	$230.00
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Baby AT 16 MHz M/B (NEAT)	$370.00
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Baby AT 10MHz 4MB M/B	$190.00
XT 10MHz 1MB M/B	$70.00
XT 10MHz 640KB M/B	$65.00
ADD-ON BOARD	
Mono/Graphics/Printer Card	$40.00
Color/Graphics/Printer Card	$40.00
EGA Autoswitch Card	$140.00
Renaissance VGA Card	$190.00
Renaissance VGA II (16 bit)Card(800 x 600)	$255.00
Paradise VGA Plus Card (800 x 600)	$230.00
Paradise VGA 16 Plus Card (800 x 600)	$250.00
Orchid VGA Pro Designer (512K, 1024 x 728)	$385.00
XT Multi I/O Card (1S, 1P, 1G, 1C, FDC)	$36.00
XT I/O Plus Card (1S, 1P, 1G, 1C)	$36.00
AT I/O Card (1S,1P) / (1S, 1P, 1G)	$25.00/$30.00
Floppy Disk Controller (XT)	$15.00
Super FDC (1.4M/1.2M/720K/360K)	$35.00
RS 232 Serial Card	$15.00
Parallel (Printer) Card	$13.00
Game Card (Dual Ports)	$13.00
Clock Card	$14.00
Western Digital XT Hard Disk Controller	$59.00
AT Duel Floppy & Hard Disk Controller(2:1)	$95.00
NCL AT FDD/HDD Controller (2:1)	$109.00
WD 1006 - MM2 1:1 AT FDD/HDD Controller	$135.00
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Mini-AT Case (3 Openings)	$45.00
Full Size AT Case (3 Openings)	$53.00
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XT-150W Power Supply	$34.00
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AT-230W Power Supply (Full size)	$50.00
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Enhanced 101 Keys Keyboard	$35.00
Enhanced 101 Keys Keyboard (Click)	$45.00
Keytronic 101 Keys Keyboard	$52.00
MONITOR	
SamSung/Casper 12" Amber Monitor	$72.00/$70.00
SamSung 12" Flat Screen Amber Monitor	$85.00
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piler mistook "PRNIT" for a line label, since it was a unique combination of characters that had not been predeclared as a variable, but was also not followed by a terminating colon. I could figure this out; but the "B" in BASIC still stands for "Beginner's," so how much trouble would a novice programmer have discovering the true fault from looking at a rather brief, erroneous error code?

LDW's user shell is relatively loosely-connected to the source code editor; in fact, LDW doesn't care whose text editor you use as long as it knows where to find it. LDW does care about source code, however; so instead of aborting compilation when it finds one blunder, it goes ahead and generates a list of everything it doesn't comprehend, displaying it in its own fully-scrollable GEM window. I, for one, can appreciate the value of long-form scrolling through my most grievous faults, as long as I don't take it too personally. Like the error reports generated by C compilers, one syntax error (such as a missing semicolon in C, or an accidental semicolon at the end of a BASIC line—which are among my most common errors) can lead to a chain-reaction—or, more accurately, an avalanche of code number after code number resulting in a scroll that would make the findings of the Spanish Inquisition look like a Rex Reed movie review. The smallest syntax error can kick the LDW compiler right in the parser, which then staggers through the rest of the source like a pelted pigeon, finding errors erroneously in otherwise elegant source code.

So regarding the question of who has the best error-handling, one's judgment criteria enters the realm of personal preference. Is it necessarily best to be informed of a blunder once you make one as does GFA, be given a list of blunders after the first draft of your source is complete as does LDW, or be gently and politely shown the first blunder found before the compiler ever sees the rest as does HiSoft? Here we must employ our powers of logical deduction. GFA's editor won't even allow the cursor off of a line it can't interpret until it's corrected and in order; but GFA's editor cannot predict (nor can anyone else's) the presence of logical errors before the program is run, such as having a subscript out of range or dividing a variable by zero. Such errors are certainly more important than typos, since they can affect the course of program development.

It therefore is almost humorously ironic, now that programming ethics implore one not to use line numbers in BASIC, that error-handling routines in programs without numbers cannot tell you where the errors are. Both LDW and HiSoft allow optional line numbers, for those who just can't break old habits. For these line-number connoisseurs, LDW provides a "trace" compilation option which returns the logical error location when the program is run; but without line numbers, the trace routines return "0." LDW and HiSoft use the accepted ERR and ERL for user-created error-trapping routines; but without line numbers, ERL (short for ERror Line) is pointless. GFA thus ignores ERL altogether.

The clincher is this: GFA 2's compiler used to generate errors in code—especially divisions by zero—where there were no errors in the interpreted source. It was as if the code generated by the GFA compiler came from an entirely different world than the GFA interpreter. Until Antic is able to release the compiler for GFA 3 (until somebody is able to release it), this reviewer is compelled to give the edge in the error-handling category to LDW 2, with its scrollable error-avalanche viewer.

Beware Of MonST2s

There is one particular spin-off of the error-handling category in which only HiSoft BASIC Professional is qualified to compete, and that is symbolic debugging. This refers to the compiler's capability to produce a symbol table, within which is included the location of assembly-language loops and branches in the compiled program, along with mostly-English descriptors which can be attached to those same locations in the assembly program listing. These descriptors then help the person reading the assembly code to understand more clearly just what is going on within that program at the machine level. Otherwise, the address labels appear as mere hexadecimal locations which, when compounded on line after line, can put a hex on one's eyes.

HiSoft (MichTron) produces a symbolic debugger utility called MonST2 (pronounced "mon-stew," short for "Monitor ST second edition") which not only can disassemble memory or executable code on the fly, but can read in the symbol table produced by HiSoft Pro and attach its mostly-English labels to the disassembly. It can, also, allow a person to run an executable file one assembly statement at a time, in order for her to be able to pinpoint the cause of an error (slow motion, for all you sports fans) or just to see a graphic im-

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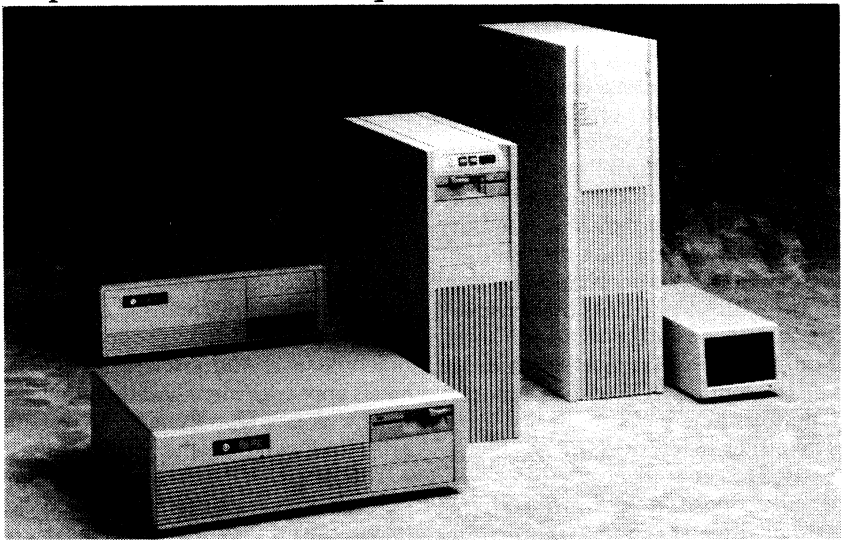

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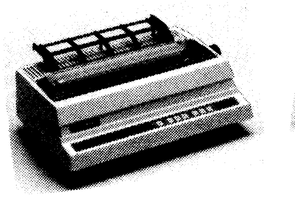

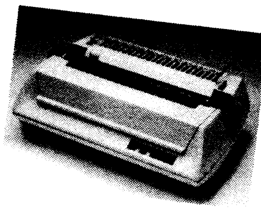

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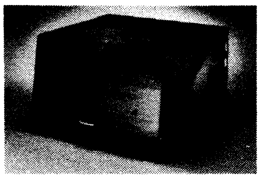

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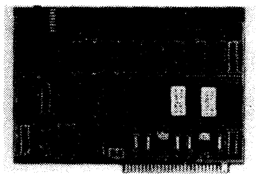

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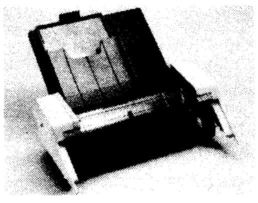

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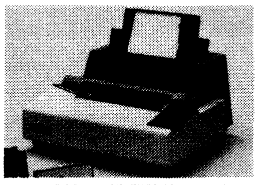

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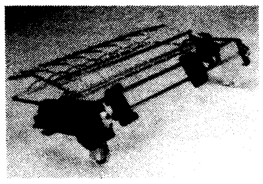

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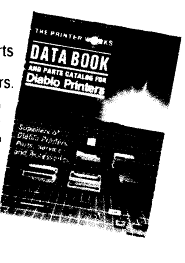

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► BATTLE OF THE BASICS, ROUND 2

age move more slowly. The symbol table used by MonST2 is in what is described as an "extended standardized" format—which means that it follows the format of GST and DRI-brand compiler products, but also adds a few extra provisions applicable to BASIC.

As stated, HiSoft Pro provides support for MonST2; but one thing it surprisingly does not provide—is MonST2. In order to be able to get it, one must purchase HiSoft's DevPac 2 assembler—a semi-clever way to sneak BASIC programmers into the realm of assembly language through the back door. Granted, professional programmers tend to generate the core of their programs with an assembler, and leave the tedious part—like user-input statements, or generating the menu screen—to a BASIC-compiled routine which calls this core.

Still, besides offering a slightly-tweaked version of the compiler, support for MonST2, and an extra library for compiling ACCessory programs, HiSoft Pro offers little else that's truly more "professional" than the standard HiSoft BASIC does, besides a $60 jump in the list price. The thickness of the Pro manual is primarily due to the fact that the lines are spaced out more. In a future edition of HiSoft Pro, I don't think it would be any extra skin off of MichTron's back to throw in an extra MonST2 or two.

Did Microsoft Invent BASIC?

I've answered "no" to this question before whenever asked by inquisitive newcomers to computing; but after taking note of the massive changes in BASIC before and after the influence of Microsoft, one can see why the question may be justifiably asked. Just as many small countries listen to the BBC World Service to best determine how to speak the Queen's English, BASIC compiler writers of late have referred to the keeper of the new Microsoft dialect—MSDOS' QuickBASIC—to derive a structure that will appeal to the mainstream of high-level language programmers.

We spent the majority of our last installment of the Battle of the BASICs discussing code structure; but with HiSoft having joined us late, it appears we must bring up the subject again. When HiSoft BASIC was first announced, it was said to be QuickBASIC-compatible. Unfortunately, by the time HiSoft could make its compiler "compatible"—to use that horrid word—with QB3, Microsoft had already boosted its numbers to 4.5. While it's obviously impossible to have a totally QB-compatible compiler on an ST—the ST doesn't require memory bank-switching every 64K, and the PC doesn't have to deal with GEM—the QuickBASIC programmer who follows each version number incrementation to the precise minute may find herself looking at HiSoft's offerings like refinished antiques.

On the other hand, a GFA veteran making a visit to either HiSoft compiler may feel, perhaps even hear, shackles bursting. HiSoft's source code appearance is, to a degree, more free-style—though admittedly to a much lesser degree than C. A programmer who uses her poetic license liberally may choose to enter a brief passage of her program containing line numbers, while the rest can contain the now-standard white space and labels; and as long as an IF-THEN-ELSE statement is restricted to one line, an END IF is not required.

We've discussed previously how GFA and LDW have elevated the subroutine to the level of "procedure." The QB3 standard adhered to by HiSoft went one-and-a-half steps further: not only by promoting some subroutines to the rank of subprogram, but also by kicking the user-defined function upstairs to the virtual level of a subroutine.

The function routine, as we'll call it, is delimited by the statements DEF FN and END DEF. Following the function declaration, any variables to be given special attention or treatment are re-declared. As LDW allows Local and Global variables to be declared after initiating a procedure, HiSoft allows a user-defined function to contain two classes of local variables, as well as variables ported in from the main program as, in a way, semi-global (hemispheric?). A Local variable is allocated at the start of the function and terminated at the end, while the more exciting Static variable is saved until the next function entry. Static variables, since their values cling to their function routines after they're used, may change the very definition of that function each time it's invoked; since having changed after the first function invocation, they would naturally be transformed at the second.

A function routine is characterized by at least one parameter being passed unto it by name, and retaining the same number of results by value to the main program. Loosely speaking, instead of mainly succumbing to the classic Old Microsoft mode of defining a function as merely a sticky conglomerate of other variables and existing functions, the HiSoft programmer is invited to utilize a process of demonstration—in roughly this manner: Okay, there's these two integers, and they're parameters passed from foreign routines, and one integer says to the other, Hey, you're too small, you need to be multiplied by the value of me...

A subprogram—if you'll please pardon any initial confusion over the various nomenclatures—in HiSoft BASIC and Microsoft QuickBASIC is different from a function routine in that the parameters passed to it (if indeed there are any) do not have to be returned to the main body of the program. Subprograms do not have to describe or depict a single operation necessarily; it need only perform redundant operations—"redundant" in this case meaning repetitive, and thus put to better use when condensed into a

► BEWARE THE VIRUS!

from page 261

"protect.acc," and it stops all attempts to write to any installed disk drive until you remove the protection.

If you've been thinking about what I just said, you'll have noticed a serious flaw in the logic. Some programs, by their very nature, must write to the disk. The word processor I wrote this article on would be pretty useless if it couldn't save text files to disk. The problem, then, is a particularly nasty one: how can you tell when the word processor is legitimately writing to the disk, and when it is doing its best to erase many hours of work? (To be fair, the word processor may be entirely innocent, and the culprit may be an invisible program that has installed itself in memory. Remember my advice to do a cold reboot before using safe software? The same advice applies to using any program where it is important to save data to disk.)

I wish I could offer you a good answer to this sort of sabotage, but I'm afraid I can't, not even in theory. It should be quite possible to produce a memory resident program that traps all attempts to write to a disk, and pops up a dialogue box warning you; in fact, the dialog box might well specify what activity was tried (e.g., a write or format) and to what disk drive it was directed. You might be offered an opportunity to cancel the operation or continue with it, or the program might simply stop in its tracks. It is also possible to store in a safe place the file size of every program in your library, and check every program to see if it has "grown" (i.e., had something added to it). But a really clever programmer could probably work his way around these forms of protection, and you can bet someone will do it some day. Short of avoiding all public domain software

► BATTLE OF THE BASICS, ROUND 2

single, recallable block rather than stamped onto the progam in ASCII excess.

A subprogram is delimited by SUB followed by a name, and END SUB; and is called, appropriately enough, by the statement CALL followed by the designated subprogram name, or even more appropriately by the subprogram name in a statement by itself. Global variables to be accessible to the subprogram are declared at the beginning of the main body of the program with the liberal, nearly leftist, statement COMMON SHARED, rather than within each individual procedure like LDW's more moderate Global. On the other side of the aisle, local variables in HiSoft are declared as such with the right-wing conservative statement Local.

Functions and subprograms may place calls to themselves—in other words, they are intrinsically recursive—unless in the case of the latter, the SUB declaration declares itself "neutral" by having the statement STATIC following the SUB declaration on the same line. A static subprogram thus becomes literally off-limits to itself. Entire arrays may be passed to a subprogram, by passing the array name followed by "()" like in C within the parameter bracket. This way, a subprogram could be used as a nice list processor without having to be made capable of processing only one list, but any list the programmer gives it. For instance, if the programmer is working with array A() and invokes CALL list (A()), and the subprogram is declared SUB list (B()), "list" will be happy to take in A() to raise, but will call it B() for its own sake.

Lurking in the midst of all HiSoft's global and subregional political recursion is that old and faithful friend, the subroutine. All the programmer needs to distinguish his subroutine is a line label or number at the beginning, and RETURN at the end. No parameters are passed and no functional values are returned by a subroutine, but big deal. It behaves like its Old Microsoft progenitor, with arbitrary and even multiple entry points, which can even succeed the RETURN statement just as long as it follows the GOSUB in execution sequence. Brings back memories of old tricks, doesn't it? No DEF PROCs and crazy ideas of "structured programming" to cloud one's creative capability; with the QB3 statement design used by HiSoft, the programmer is free to design his own structure.

On your score sheet, chalk one mark for HiSoft's more matured keyword vocabulary and application.

In our next installment a few issues hence, we'll explore further whether the Microsoft structure will blow away our utopian visions of GFA's and LDW's supremacy; and hopefully by that time we'll finally have the GFA 3 compiler in our possession, so that we may finally pit it against LDW and both HiSoft compilers in the Finals of the Battle of the BASICs benchmark time trials. Until then, we're always interested to hear your own opinions in the C*SIX group on DELPHI. Give us a call, pass your parameters, and we'll be sure to declare our global variables and thus function properly.

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LDW BASIC Rev 2.0, $89.95, Logical Design Works, 780 Montague Expressway, Suite 403, San Jose, CA 95131. 408-435-1445.

HiSoft BASIC, $99.95, HiSoft BASIC Professional, $159.95, MichTron, 576 S. Telegraph, Pontiac, MI 48053. 313-334-5700. ●

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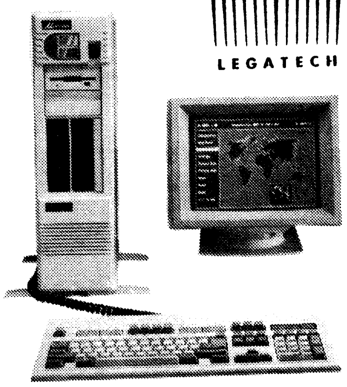

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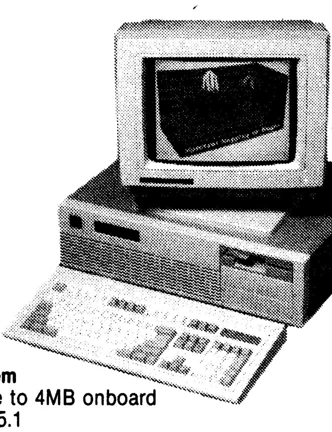

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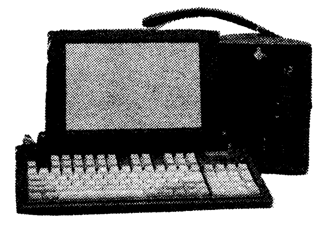

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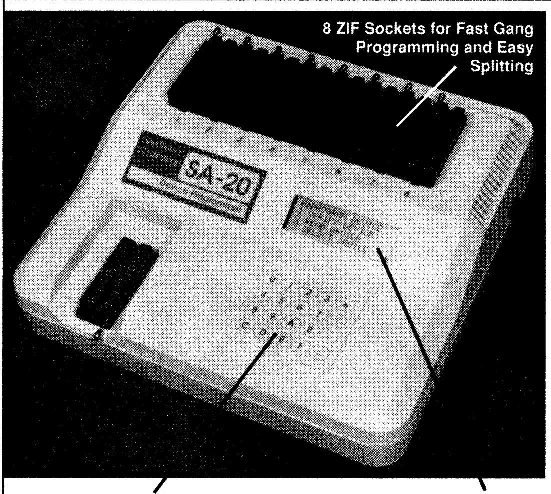

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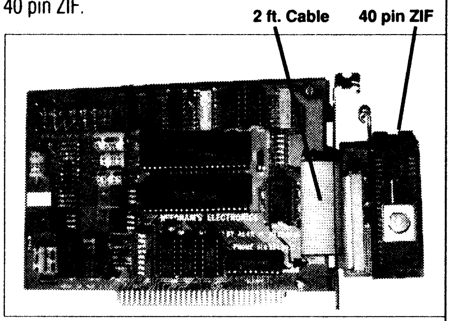

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UTILITIES PLUS

Reviewed by Frank and Sally Nagy

Five powerful utility packages, once sold separately, have been crammed together into one superior condensed product. MichTron has squeezed DOS Shell, M-Disk Plus, MichTron Utilities, Super Directory and STuff into one neat package at substantial savings to users.

Gain control of those piles of disks, run batch files, copy multiple files, modify bytes, create RAM disks and printer buffers. These and many other useful options are available utilities and desk accessories found in Utilities Plus.

DOS Shell

Tired of constantly using your mouse to operate those simplistic GEM windows? Want to have a more hands-on feeling of control by typing commands using DOS? Use DOS Shell commands to display basic information, manipulate files, create or remove directories, give special batch commands, and redirect standard input and output.

DOS Shell mimics MSDOS ("Micro-Soft Disk Operating System"). Simply type a "?" and it displays a list of all commands. The manual discusses how to create structured data storage by using directories and subdirectories.

M-Disk Plus

Two programs, M-Disk and Soft Spool, reserve memory to load, save data and allow various other kinds of operations to go on while the computer is printing a document. Change the shape of things to come by adjusting the size of M-Disk's RAM disk and Soft Spool's printer buffer using the Config file. Save the pre-configured M-Disk

---

► BEWARE THE VIRUS!

entirely, which is an entirely unsatisfactory solution, I can only repeat my warnings to follow the procedures detailed in all cases where you can't afford to lose your programs or data.

To be absolutely safe, keep your disks for different programs separate so that infections won't spread—if you have your First Word files on one disk, save your PDWRITER files on another. And do a cold reboot before you switch to First Word or after you've finished with PDWRITER. In this way, if worst comes to worst and you are hit by a virus, the number of disks that you lose will be reduced greatly. If you follow my advice on rebooting and using TOS to copy individual files from disk to disk, you can then make backup copies of the saved files with little fear of copying the virus, too. For your information, the new TOS ROMs will offer a keyboard equivalent to the cold reboot, so you won't even have to reach around the back of the ST to reboot. If you resent the idea of having to reboot, then console yourself that this will at least free up any memory that has been eaten by RAM disks etc.

The Moral

If you follow my recommendations scrupulously, you should be safe from electronic contagion for the forseeable future. You'll also be doing a lot of extra work that may not be necessary, that will be time-consuming, and that will be a frustratingly primitive way of using your computer. In an ideal world, none of this would be necessary. Although the ST world is still a pretty safe place, and you can probably get away without these precautions for some time yet, the question you have ask yourself is a simple one: what investment in time and money have you sunk into your software, and are you prepared to risk that investment now that you know the saboteurs are out there? I'm cautious by nature, and I plan to be more cautious in the future.

One final note should be made for our "friends" the software pirates. We're all familiar with the moral arguments against software piracy, and I won't rehash them here. But if you haven't been persuaded to clean up your act by the moral arguments, how about by a good dose of fear? There are strong rumors that some professional programmers have decided to become saboteurs in their own right. To gain revenge on the parasitic pirates, they have released "cracked" versions of their own programs into the pirate underground. (A "cracked" program is one that has been stripped of its copy protection so that it can be copied and passed on to other pirates, who can use it without paying a cent to the owner.) To the horror of many a would-be pirate, increasingly many of these programs are booby-trapped with particularly subtle viruses, Trojan Horses, and tapeworms. In one celebrated case, two Pakistani brothers ran a "pirate software" operation whereby they sold famous and expensive software (e.g., Word Perfect) for little more than the price of the disks. Approximately a year after they began this business, purchasers of the stolen software around the world suddenly discovered that they had committed electronic suicide by importing a particularly nasty Trojan Horse.

My gut feeling is one of admiration —I wish I had thought of that, because it's a particularly fitting, if cruel, form of poetic justice. However, many innocent people suffered as well, simply because they permitted a friend or coworker to use the sabotaged software on their computer, ignorant of the fact that the software had been pirated. For this reason, I don't wholly condone these actions, because you shouldn't have to question the honesty of your friends before allowing them to use your computer. ●

and Soft spool in AUTO folders ready for your next custom bootup.

MichTron Utilities

Repair damaged disks quickly with MichTron Utilities. Recover mistakenly deleted files. Change attributes and volume names. Read and change individual bytes of information. The company recommends making backups of any work warning that mis-use of this powerful tool can disrupt an entire disk.

SNAPSHOT can save screen to disk just like taking a photograph of what appears on a monitor. Pictures produced by this process can be viewed using ST slide show programs like Degas, PicSwitch and DSlide. The program allows these pics to be numbered consecutively for saving to disk and later renaming.

FORMAT formats disks with the normal 9 sectors per track or gets fancy by extending an extra sector to each track. It has the additional capacity of preparing disks for either single or double density use.

M-COPY copies only those sections of the disk actually used by the program, leaving the rest of the disk unformatted.

MI-DUPE makes backups of almost any and all disks, even those with copy protected material on them.

STuff

STuff contains a collection of 21 programs and accessories.

Auto STuff Programs are designed to be used in AUTO folders.

AUTODATE remembers the last date and time the computer was booted.

CAPSLOCK deactivates the capslock key for those of us who are constantly hitting it by mistake. The way to reactivate the caps is the reasonable combination of pressing both the Alternate and Capslock keys at the same time.

HARDAUTO gives hard disk users the option of filing their system's AUTO folder on their hard drive. The results is a much faster access.

HIGH permits color monitor users to boot in medium resolution instead of the default low.

KEYCOMBO sets up three "hot keys" to send ASCII form feed character to the printer, blank the monitor's screen or reboot the machine.

ONEHAND makes Alternate, Control and Shift toggle on and off rather than merely engage when depressed. This is useful to free the user from engaging constant vigilance to these keys.

RESET makes every reset a "cold boot" without the "Possible thermal stress to the ST of cycling the power switch."

With **STSELECT**, choose specific AUTO folder programs and your desk accessories prior boot up, making less time wasted fiddling around within start up procedures.

VERIFY disables the computer's automatic queries to verify disk writes. Old hands can speed up most ST applications. The absence of this protective device offers a breath of fresh air. ("Are you sure?")

Most of this STuff will work with any ST system,, except AUTODATE (which requires you do not have a clock card), HARDAUTO (which requires a hard drive), and HIGH (which requires a color monitor). The manual explains how to install these programs into any AUTO folder to work properly together on a disk.

Desk STuff

AUTOGEM auto boots GEM application programs.

AUTOFOLD changes the order in which files are executed within AUTO folders.

FILELOCK provides the opportunity to encode various passwords to keep different levels of confidential or sensitive information secure from the wrong probing eyes.

TOS STuff tosses out the 1040's extra memory, making it run like a 520. This program strips down the 1 meg ST for those programs which can't operate properly with this extra memory.

KEYCODE returns the TOS scan codes for any selected key. KEYCODE is useful with FORMFEED.

TTP STuff

"TOS takes parameters." STuff works with TOS programs requiring parameters such as filename or command in order to function properly. These perform some operation like printing, sorting or editing. The following fall under TTP programs:

FC compares two programs or binary data files, and shows the bytes which differ between them.

FDEL goes one better than the standard Delete command. It erases everything that once was within the file. All trace of information on the actual disk sectors are removed, not just the directory entry. This assures deleted files cannot be restored for unauthorized recovery.

GREP searches one or more text files for any given string.

HEADER is an informative tool for the programmer showing data about a program file, size of various segments of the program and the length of the symbol table.

HEX displays the contents of a disk file in hexadecimal (base 16) the "base language" of computers.

TOUCH changes the disk file's dates and times to the system's current specified date and time.

Unhide makes changing attributes of any disk file easy.

PATCHER.BAS, an ST Basic file, is designed to implement short program patches. Make corrections without using a sector editor or returning a disk to the company.

Super Directory

Use Super Directory to keep track of all your files on floppy or hard disk. Each disk file entry record consists of filename, disk number, category, filesize, pathname and remarks. Each

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The PC Configuration Handbook $19.95

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PC Magazine's DOS Power Tools $34.95

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JUGGLE SEVERAL FILES IN ST MEMORY

Reviewed by Frank and Sally Nagy

Juggler II

While the name may conjure up images of a skillful fellow in face-paint keeping various items aloft, Juggler II is really a serious application allowing as many as seven other programs to reside in computer memory. It works with any Atari ST, but the more memory, the greater number of programs can be juggled.

By following the simple instructions, one can load any given file from a selected drive and folder.

Create ASCII text files with your word processor for auto boot instruction files.

Configure Juggler to automatically initiate an odd mix of GEM applications, each cranking out its own Desktop Information File. Each file can be set up in accordance with its own specific resolution, since Juggler partitions the memory in such a way to make each section totally autonomous.

It's even possible to have Juggler with several GEM programs in it, switch to a non GEM game.

Upon booting, Juggler II detects available memory and divides it accordingly. With Atari 520 STs, Juggler defaults to two 256K partitions, while 1040 users will be able to set up two 512K or four 256K partitions. Mega 2 users can have two 1MB partitions, one 1MB and two 512K, or even eight 256K partitions. These possibilities make Juggler very adaptable.

Using either the key combination (alternate and shift keys) or the accessory, instantly juggle between partitions. The key combination is easiest to use with two partitions.

For the type of person who likes to work on two or more things at once, this is great! Move easily between applications, while avoiding all the hassle of saving files, exiting and reloading the next program. This makes for much smoother transitions.

Load a word processor in one partition and a drawing program in another. (Sally was glad to see that Degas' Art program can be used with it.) Have your favorite language in one, and its compiler in the other. Write your report on spreadsheet results more easily. Referring back and forth between your word processor and database will be a dream.

Just think of the possibilities. Mega 2 owners could divide up between word processor, modem, game, and spreadsheet programs.

Unfortunately, though you can put a modem program into Juggler, switching out of it to use another program suspends all modem activity and returns you to where you were before. Unlike some programs which give the possibility of background down loading, Juggler does not let more than one activity go on at the same time, but merely allows the user to switch into and out from different files instantly.

After discovering many programs didn't behave properly with his original program, Juggler's author created Juggler II. This new accessory allowed use of several more "problem programs." Even with this, many memory hogging games and programs still won't co-exist with Juggler, since they contend for the same memory.

Most applicational programs with keyboard input are reputed to work.

There are a few exceptions, however, like MichTron's ALT, MichTron's BBS Version 2.1 (though it's reported that 2.2 will work) and QMI's Deskcart. Some GEM games, auto booting programs, and programs that cache your hard drive also will not operate.

The manual contains hints on adapting programs to function with Juggler, so the user should be able to assure himself of a number of uses of this system. But, if you can, it may be wise to first try Juggler with the applications you have in mind before purchasing.

Juggler II operates with either monochrome or color monitors and is recommended by the company for use on a hard drive.

Juggler II, MichTron, 576 S. Telegraph, Pontiac, Michigan 48053. $49.95. ●

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remark can be 25 characters long. "Using wildcards and dummy characters enhances the usefulness of the FIND command."

Now, Who Can't Use This?

Who can't use some help organizing their disks?

PD Undeletes are available, but usually halt at a blown sector and say, "Sorry can't resurrect that file, at all!" This utility package has an Undelete that will bring back as many sectors as have not been written over. The recovery process in this case, is neither pleasant nor quick, but it can be done.

We grant that most of these utility fixes are not going to be used that often. Yet, how nice it is to have the tools to do the job readily available when you need them.

Some of these files have similar ones in the Public Domain, but considering download time and cost of phone calls, you can spare yourself a lot of inconvenience to get them in one purchase.

We especially like Disk utilities, Super Directory and DOS Shell and the special care MichTron has given to making clear instructions and warnings about each aspect.

This package is on the whole worthwhile for all types of Atari ST users whether they have a color or monochrome monitor. Only one program is color specific and a handful of others will cast a few strange, ghostly images on a color monitor. (Though, those with older versions of the disk based TOS may also find AUTOGEM giving them troubles.)

But with five utility products on one disk, how can anyone who finds use for a quarter of these utilities get less than their money's worth?

Utilities Plus for the Atari ST, $49.95.
MichTron 576 S. Telegraph, Pontiac, MI 48053. 313-334-5700.

For those who presently own one or more of these, update fees are found as follows:

Product	Update fee
MichTron Utilities	$15.95
DOS Shell	$20.00
M-Disk Plus	$20.00
STuff	$20.00
Super Directory	$20.00

Those with any two of these five utilities may update for $15.00.

Those owning any three or four of the five utilities can receive an update for only $10.00. ●

ATARI ST SIGHTS AND SOUNDS

by John Nagy

Stereo sound and enhanced VCR/composite/RF output are now offered for the Atari ST by a pair of accessories from Practical Solutions of Arizona. Tweety Board ($59.95 list) is an internally installed board that provides three hi-fi audio outputs from all ST software, with the three voices separately available for external amplification. Videokey ($99.95 list) simply plugs into the back of the computer to add the "missing" RF modulator and composite video signal for 1040STF and Mega owners.

VideoKey

One of the first projects I put my 1040STF to was to produce a TV commercial for our Atari club's computer show. I used Cyber Paint for its great power in animations and color text handling. Unfortunately, the 1040STF has no composite video output, nor any TV channel output (RF for Radio Frequency modulator). Since my final animations were too large to load into a 520ST with the built-in composite and modulator, I hunted up an upgraded machine to make the conversion to videotape. I vowed to find a better way, and Practical Solutions provided it in the VideoKey.

Residing in a low 5" square box, VideoKey plugs into the monitor output of any ST or Mega computer. The monitor, in turn, plugs into the VideoKey. An external "on-wall" power supply is provided, an unwelcome addition to the plugstrip clutter already engulfing my computer room floor. Fortunately, the VideoKey can be left on, and in fact has no switch. It automatically shuts off if the computer is not ON and in a Color mode.

Outputs include the standard ST monitor through-jack, standard audio and video (composite) on RCA phone jacks, and a "TV" RCA jack that is a switchable channel 2 or 3 output. The only other features on the VideoKey are an LED for operation indication, and a small recessed trimmer for matching the unit to your computer.

Although this all sounds like VideoKey is merely the missing piece of hardware that comes in a 520 (and now on the freshly introduced 1040STFM), VideoKey outperforms the factory internals by a fair margin. The "Colorloc" trimmer lets you adjust the unit to synchronize with your ST. This quite effectively eliminates the edge "crawl" and "snakes" you may be familiar with in unsynchronized color video. The trimmer is simply turned until the power light glows brightest, and the one-time calibration is complete.

I was very happy with the output to a composite color monitor when using Low Resolution, and Medium was also usable but tiring to read. Practical Solutions does not make any claims that Medium Resolution output will be acceptable, and their manual in fact repeatedly tells you not to expect much in that mode. However, I felt that the Medium output was better than I had gotten from a stock 520. Color saturation was more even and more accurate in both modes than the 520 both in the composite and RF outputs. Too much color may even be a problem for some users who have no "real" color ST monitor to use with the VideoKey. Since the unit expects the load of an RGB monitor while driving composite outputs, running without one may cause too much signal to be delivered to the other outputs. The VideoKey manual warns of this possibility and offers to provide a termination device if it is a problem. I was unable to overdrive

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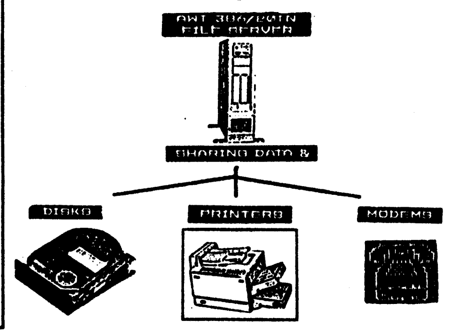

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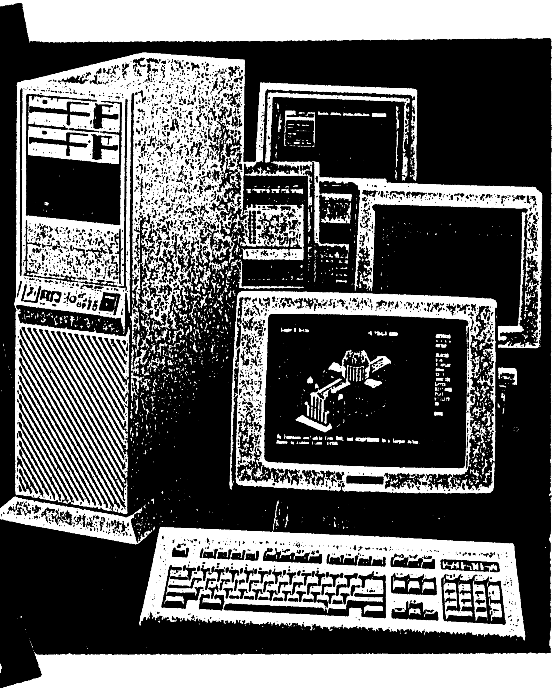

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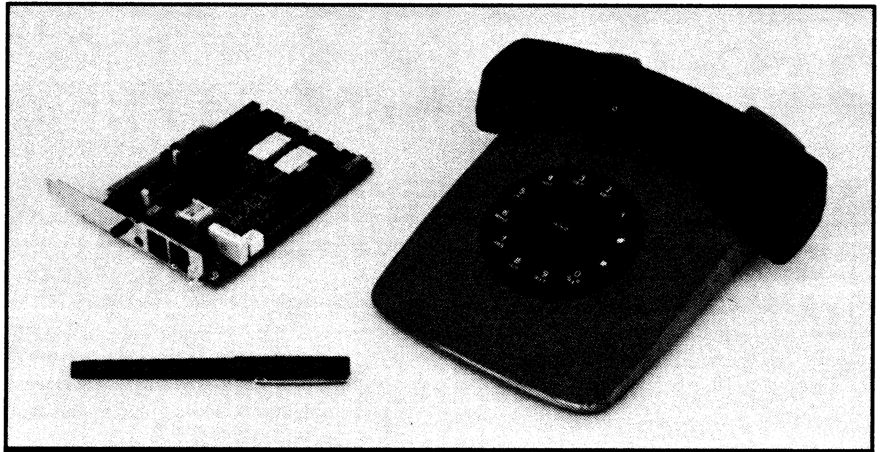

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► ATARI ST SIGHTS AND SOUNDS

either my VCR or my composite monitor at any time, so this may be overly cautious documentation. The manual also gives hints on color combinations and imaging to help live within the limitations of composite TV.

Overall I am very satisfied with the VideoKey. It does what it promised and does it better than internal units. For driving a color TV for occasional color games and color-only programs, VideoKey will satisfy most users. For home taping to a VCR, particularly in Low Resolution, it is invaluable for animators using the Cyber or other art programs who want to show their work without lugging their computers around.

However, I must add that neither the VideoKey nor any ST with internal modulator will produce "standard" composite video suitable for use in professional TV settings. I found that my commercial, once recorded on videotape, would not play back on professional equipment without uncontrolled rolling. Similarly, when plugged directly into a studio VCR, the image would not lock up. To be fair, Practical Solutions never promised this ability, and in fact explains the problem in the "Technical Jargon" section of the manual. The clock rate of the ST results in a horizontal synch rate 35 hertz higher than the NTSC standard. Add to that the fact that the ST develops no real "vertical blanking" pulse that professional equipment relies on to lock on an image, and your pro interface falls apart. To do this kind of produbbing will require a unit like JRI's Genlock system that actually readjusts the ST clock speed and creates complex additional synch pulses. The JRI unit retails for more than five times the VideoKey's price and only goes in Mega systems, so you get what you pay for. At discounter's prices under $65, the VideoKey delivers plenty for the money.

Hint to users who need to interface to a commercial setting: an acceptable image may be obtained by displaying the original or videotape image on a large studio composite monitor, and shooting the image with a pro camera. The resulting image will have suffered slightly for the process, but additional image enhancement devices in most TV studios can make up most of the loss.

Tweety Board

One of the supposed "major" flaws in the ST series computers, if you listen to Amiga enthusiasts, is the lack of stereo sound. Never mind that the ST has a MIDI jack for serious musicians, internal stereo sound is considered important by some. Tweety Board does stereo one better—sort of. It provides a separate output for each of the three ST system voices via external RCA jacks. Simply plug each one into an amplifier, and get instant "3 dimensional" sound from any multi-voice ST software.

Three, you ask? Yes, the ST has three channels, so three outputs are provided by Practical Solutions. A "Y" connector is provided to patch any two channels together to allow using a standard two channel stereo amp. How is the sound? Variable between Incredible to very unpleasant, with an average of outstanding. Music using the internal voicing, plus sound effects addressing the sound in a standard fashion, all sound wonderful, with the split sound adding realistic depth and positioning cues to the music. However, digitized sounds are awful, sounding coarse and windy, like a bad overseas phone connection. It seems the digitizing play schemes depend on both the mixing of the three channels and the limitations of the tiny amp and speaker in the ST monitors to shape the sounds into recognizable words and effects. Similar to the unsatisfactory early attempts to put TV pictures on a huge theater screen, the unexpected fidelity of reproduction overwhelms the available resolution.

Installing Tweety Board: Fear Of Frying

You must install Tweety Board inside your ST. This means a possibly traumatic adventure into the guts of your prized computer. Even though I had been inside my machine before, I was hesitant to do it again, especially since it was working fine, and I would have to install an alien device that would live there from now on. I put it off for quite a while. Fortunately, I heard no horror stories from other owners who had installed one, and I witnessed several demos that made me anxious to get mine running. Finally, I put the comforting tunes of Elvis Costello on the CD Boombox I had bought for the express purpose of running Tweety into, grit my teeth and opened my 1040STF.

The manual was very helpful and detailed. The only disconcerting thing was the disclaimer that disassembling the computer voided my warranty, a fact that was expected but not reassuring. Off came the top. Then the keyboard. The disk drive next. Mine also required the power supply to be removed, despite the manual being silent on that issue. There appear to be more variations of ST innards than one might expect. The motherboard came out altogether, and then the shields were removed. A naked ST is not a pretty sight. About at this time, Elvis was crooning "accidents will happen."

The phone rang. The pizza man arrived. The cat found the screws I had hid on top of the file cabinet and proceeded to play her best hockey game with them. Parts were all over my floor, and I had to run in and out of the room repeatedly. Elvis: "Watch your step."

Tweety Board has a plug on a ribbon connector that simply plops over the top of the Yamaha sound chip, and stays in place with an adhesive strip. Then the board sits anywhere convenient, attached by another adhesive pad. A three-jack affair on a wire feeds out

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► MODEMS AND SUCH

from page 292

Moderator for some time, was taking a much needed rest, and resigning. A new Moderator was needed, or the network was to go off the air as of December 15th. As the date fast approached, there had been no volunteers! At almost the last minute, James Young, the SysOp of 221B Baker Street volunteered his services! However, I regret that we have lost our connection with Canada, since Bill is no longer maintaining his board. I hope we will soon be able to find another connection to Canada. I miss talking to my friends there.

I don't think any of us can thank Jim enough for taking over for Bill! Most BBS users take the services of a BBS for granted, and don't realize the time and effort that each SysOp must go through to maintain their board. Jim does that without complaint. He not only maintains one board, but two, so that everybody gets an even chance at using his facilities. Now, on top of this, he is going to spend time and money moderating the Adam network for us so we can maintain a much needed support system!

As an orphan, Adam needs this support system. It is one of the few ways to find out what is going on in Adam's world. Where to get the hardware and software you need, and what company is developing new products for Adam. The only other ways that I know of are through the newsletters put out by the various User's Groups that are still operating, and the articles in *Computer Shopper* each month. Write an occasional letter to let them know that you are reading the articles and appreciate them! Incidentally, they chose James Young as the December SysOp of the month!

And, by all means, support your BBS SysOp! Get a modem! Log on, and participate in the Adam area. The amount of messages contained in an area is often the yardstick used to measure if that area is to be retained by a BBS. Let us hear from you, even if you only say "Hello." We need your voice! Also, if you find you have a couple of extra dollars burning a hole in your pocket, send it as a donation to your favorite board. The SysOp can surely use it! It costs money to keep those boards up and running, as well as a lot of time!

Thank you, James Young, and all you other SysOps out there!! ●

ATARI ST ATARI ST ATARI ST ATA

next to the modem port, and attaches externally to the case by yet another glue strip. Altogether, it is a snap to install, once you get down to the computer motherboard. It's all in getting in and out again. And despite Elvis's "Beyond Belief" playing as I completed reassembly, it was actually no big deal.

I had heard a couple of reports of quirky side effects after a Tweety installation ranging from random desk bombs to failures to boot heavily protected software. However, I found no effect whatsoever on any software or hardware I have or have been able to test, so I take these reports as flukes or defective machines.

The sound is—amazing. The ST sound chip is capable of a terrific range, and most music on commercial games is written as though they expected it to be heard the Tweety Board way instead of through the miniature speaker on the monitor. Practical Solutions suggests combining channels A and C on one side, with B on the other for best overall stereo results. I found this to be the best average setup as well, although on some software, other combinations made a better balance of sound. Remember, each programmer has used the three channels any way that was convenient at the time, not likely knowing that a system like Tweety Board might later take them apart. I even found that some programs, like Tetra Quest, would sound far better if you could provide a separate amp and speaker for all three channels. Some of the voices fight with each other and cancellation effects that were impossible to discern through the mono output are apparent through Tweety. Nevertheless, I found not a single program with non-digitized sound that didn't sound fabulous. The audio signal is as clean as a CD, absolute silence until the deadly clear sound and music burst forth. Even typing "tinks" are clear and bell like. But digitized sounds are so abrasive that games with those effects are simply intolerable. No, your monitor's sound is in no way affected, so you lose nothing to go back to the old ways at any time.

I absolutely recommend Tweety Board to any ST gamer who appreciates the quality soundtracks of today's best games. But on the other hand, more programs are using digitized sounds, which is the system's only flaw.

As I have seen Tweety Board for as low as $40, and I believe it will substantially increase most users' enjoyment of most entertainment software, I rate this accessory from Practical Solutions as a "must-have."

Practical Solutions has recently moved to a new office/warehouse/development facility that will enable them to offer more and better products for all lines of computers. Contact them at 1135 North Jones Blvd., Tucson, Arizona 85716, or call them at 602-332-6100. ●

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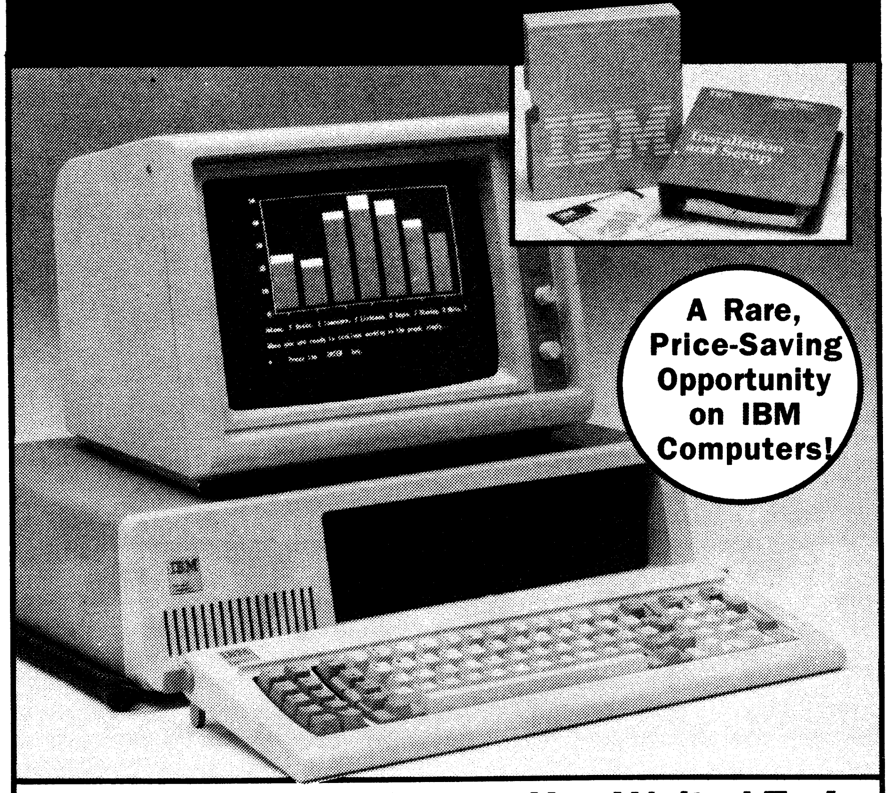

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